



## MUSKRAT

*Ondatra zibethicus*



The muskrat is a common semi-aquatic species found throughout Vermont. It is much smaller than a beaver, but larger than most rodents. The muskrat is very abundant today, commonly found in nearly all of North America; from the Arctic Circle to the Gulf of Mexico and from the Atlantic to the Pacific Coast.

## VERMONT WILDLIFE FACT SHEET

### Physical Description

The common muskrat, *Ondatra zibethicus*, is the largest American member of the Muridae family. Numerous species of rats abound in North America, but muskrats are distinguished as being semi-aquatic and the only ones with long vertically flattened tails. Fossil remains of muskrats predate the Pleistocene period by thousands of years as determined by radiocarbon analysis.

Muskrats are robust, short-legged rodents having the well-developed incisors of all rodents. Both front and rear feet have five toes. The inner toe of the front foot, however, is not much more than a nub when compared to the other well-developed toes. Other toes terminate with a noticeable, rather sharp claw or toenail. Toes on the hind foot are webbed, but not nearly as much as those of the rear foot of a beaver. Nevertheless, when these toes are spread in swimming, they provide the muskrat with fine paddles which, when combined with the sculling action of the tail, easily propel the chunky body through the water.

The soft, but durable, resilient coat of the muskrat is dense and waterproof, overlaid with longer guard hairs and insulated at the skin with dense underfur like the down on waterfowl. Color is a deep rich brown, much darker dorsally due to many black-tipped guard hairs, blending paler on sides and flanks. Underparts are lighter colored and vary considerably. Usually the lighter brown belly shades to silvery gray or white at the throat. The paler belly fur and lustrous gray undercoat often is used to make fur-bodied fishing flies by fly tiers. A blackish chin patch is evident.

Eyes are clear brown. Ears are relatively small, rounded and cupped, mostly hidden in dense fur.

Body size often varies with environment. Muskrats from extensive cattail marshes usually are larger than those found along pastured streams and in woodland swamps. In the Northeast, mature specimens average about 21½ inches long overall, the tail being 9½-10 inches. Weight ranges from 1.7 to 3 pounds.

A southern subspecies, the Virginia muskrat, *Ondatra zibethicus macaroon*, has brighter colored fur. About half of them are the dark phase with more black on the guard hairs giving the back and sides a uniform brownish black. The darker fur is more valuable. Their bellies are gray, rust, or dark brown. Color varies greatly. The skull of this subspecies is massive relative to its body size. Another southern subspecies, the Louisiana muskrat, *Ondatra zibethicus rivalicus*, also is smaller than the common one. Its fur is duller, lacking the reddish or tawny highlights of its northern counterparts.

### Range

The common muskrat or its subspecies are at home in nearly all of North America in the temperate zone. They are found from the Arctic Circle to the Gulf of Mexico and from the Atlantic coast to the Pacific.

### Habits

Muskrats are seldom found very far from fresh water. They

abound in extensive cattail marshes and swamps where water is of near constant level and relatively shallow. A great variety of plants in these places provide excellent food supplies.

These rodents are predominantly vegetarians or herbivores, eating roots, tender stalks and leaves of cattails, sedges, and grasses. They also may graze in nearby fertile fields and are not above stripping corn. In a woodland stream environment, more than half of their diet may be green algae taken from floating masses in setbacks or scraped from rocks. Fresh water clams, some fish, and crustaceans also are credited with providing a minor part of their diet.

Shallow channels six to eight inches deep often are dug to make swimming easier between pockets of deeper water, and to create escape routes, entrances, and waterways around their houses and feeding areas. In fact, the shallow muskrat marsh is a network of canals.

Houses are made at the end of a canal in the marsh or a burrow made in a bank. Cattails and decayed vegetative debris from the bottom is piled at the site in a marsh along with mud from canal digging. Sometimes the piles are three to four feet high. Under the pile, the canal is cleared and an above water level chamber or nest is formed. It is a foot or more in diameter, sometimes with connected neighboring tunnels for another family. Several entrances are common in larger houses. More than one house for a muskrat family is common. A muskrat family may have one

main house and several smaller ones for safer breeding. These are called *huts*.

Bank dens usually have a vent close to the nest, extending upward from the top of an entrance burrow to provide air.

Sometimes during hard winters, especially open ones, muskrats are forced to move and find shelter where they can. Muskrats at these times are very vulnerable to many predators as they run from place to place in the open, seeking food and shelter. Their dark bodies contrast sharply against snow and ice. They are readily seen and become easy prey. Shelter is sought under cattail blowdowns or logs and in stump pockets. The predation toll on muskrats is high at these times.

Except under severe freezing conditions, however, muskrats survive making use of loose *rafts* of grasses or floating debris through which, even when frozen, they can dig up to get out or get air as they swim under the ice. Thus, traveling from air hole to air hole, they can forage on fleshy roots and stalks of many aquatic plants, some of which are taken back to the nest to eat at leisure.

**Range damage** is fairly well understood with regard to wintering white-tailed deer, but damage to muskrat range is less recognized. It too is common when population or 'rats' are not controlled. *Eating out* may mean going out to dine for us, but when talking about muskrats, the term means the muskrat population of a marsh or other environment has exploded and practically all available food sources have been

eaten. The renewal capability of the habitat is reaching the point where it can no longer support these animals. Where a local range has been *eaten out*, it may be so severely damaged by sheer numbers of muskrats, each requiring food and shelter, that it may never recover to its original potential. The whole environment may be radically changed by encroachment of fast growing, less supportive plant species.

## Reproduction

Muskrats, like our other rats, are very prolific. In southern states, breeding occurs year round, but is mostly from November to April. In Vermont, the first litter is born in late April or early May after about a 30-day gestation period. Normal life span averages three or four years.

The young are born blind and sparsely haired in a nest lined with dry vegetation. They are helpless except for their ability to hang tenaciously to a nipple. Eyes open about two weeks after birth when the young muskrats are well furred. They now begin to swim and nibble on various plants. Weaned at two months, they are nearly full size at six months. Females born early in the spring may have a small family of their own the same year in the fall. Four litters of five or six young muskrats are common.

During the breeding season, anal scent glands become enlarged and produce a noticeable, pleasing scent or *musk*. It provides scent communication and gives the animal its name.

## Predators

The mink is the most feared predator of the muskrat. Mink are fast and can overpower even mature muskrats, which they do, entering burrows and houses with abandon. Raccoons, though less aggressive, also are a key predator on small muskrats in many areas.

Foxes, coyotes, otters, skunks, snapping turtles, large predatory fish, large owls and hawks, particularly the marsh hawk, also seek out muskrats — especially the young ones. Man is a serious predator too, taking them for their fur, but he also finds muskrat fine eating. Maybe more use should be made in that direction in the Northeast. The meat is considered a traditional delicacy in more southern states where it is commonly sold in stores and restaurants.

## Muskrats and Man

Although the beaver has had considerably more impact historically in the development of North America, the fine, durable waterproof fur of muskrats and their sheer numbers provide an important resource in Colonial times as they do today. They are by far the largest single species taken for fur. Millions of their fine pelts annually provide a solid base for this *renewable resource* market. Modern fur-processing techniques greatly increase its consumer appeal, 'mink-dyed muskrat' coats being but one well-known example. Their fur provides millions of dollars directly to trappers, traders, and processors, and indirectly, a good

portion of these dollars are pumped into local economies. Some 20,000 to 30,000 muskrat pelts from Vermont are sold each year.

It is a **good** thing so many muskrats **are** taken each year — good for people...and for muskrats. When muskrat populations are prevented from becoming excessive for their habitat, the animals stay healthier. If their populations are allowed to explode, muskrats are wide open to several diseases which take severe tolls on the animals and cause unnecessary long-term suffering. Some of these diseases, like hepatitis and tularemia, also are dangerous to humans and can have water-borne transfer without direct contact with infected animals.

Uncontrolled, muskrats often create additional problems for people by undermining roads, culverts, dikes, and dams. Raised water levels in spring often change placid *rat marshes* bordering man-made conveniences to forcibly flowing waters for a brief period. Muskrat tunnels and canals then erode quickly causing serious washouts and diversions of streams.

## Regulated Trapping

The animal's high reproductive capability responds well to even intensive trapping pressure. Regulated trapping helps to control numbers of muskrats and is the most practical and humane method for combating overpopulations of the species.

The health of this historical wildlife species and that of **man** are protected by the judicial use of trapping.