

The Muskrat



DNR



in South Carolina

BIOLOGY, MANAGEMENT & CONTROL

DESCRIPTION

The muskrat (*Ondatra zibethica*) is not actually a rat, but is classified as a rodent because of its teeth: four large, yellowish incisors in the front of its mouth. The animal also has flat molars for grinding vegetation. Southeastern muskrats average about 2 pounds in weight and 2 feet in length, including a vertically flattened 8-to 12-inch tail. The waterproof fur is soft and thick and is generally dark brown on the back and sides, becoming light grayish-brown on the belly. The muskrat has a stocky appearance due to the apparent lack of a neck, and the ears are short and concealed in the fur. Its back feet are partially webbed and its smaller front feet are adapted for digging and feeding. Muskrats have lips that act as valves that close behind the front incisors that allow it to gnaw underwater. The musky odor comes from two perineal scent glands located beneath the skin at the ventral base of the tail. This musk is used during the breeding season to mark an area.

DISTRIBUTION

Muskrats are abundant in the Piedmont of South Carolina, and there are scattered populations in the Upper Coastal Plain as well. They are semi-aquatic mammals, living along streams, lakes, ponds, swamps and marshes.

HABITS

Muskrats are polygamous, and begin breeding in early March and continue throughout the summer. Populations can build up quickly, as a

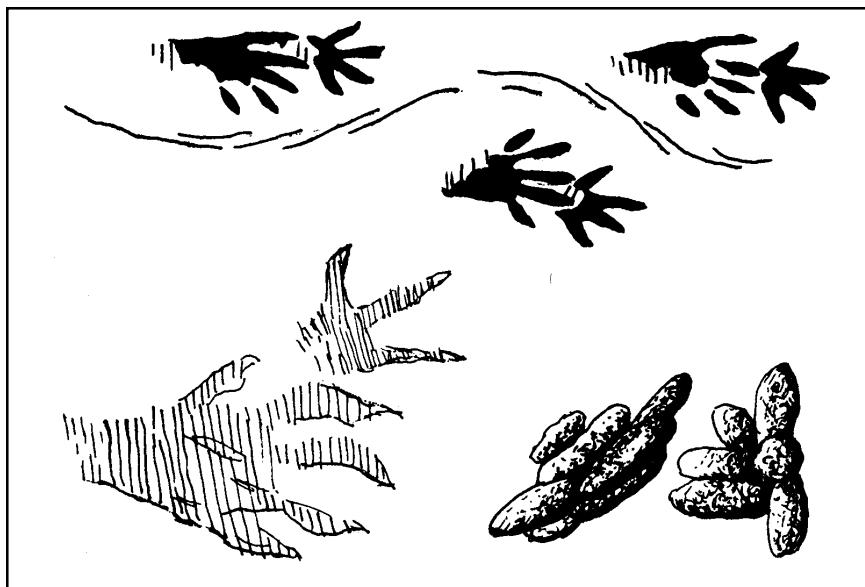
pair of muskrats can produce four to five litters with five to seven young per litter each year.

Muskrats are active mostly at night, but they may be out and about during the early morning and later evening hours as well. Primarily vegetarians, they eat plants such as cattails, water lilies, bulrushes, smartweed, water potato and willows, and may also eat corn, carrots, apples and other cultivated plants. Muskrats will occasionally eat meat in the form of freshwater mussels, clams, frogs and crayfish. Fish that are found dead will be scavenged and, in rare instances, a muskrat may catch one of the slower swimming rough fishes. It is a common misconception that muskrats pursue and capture many of the gamefish species. It is simply too much work for a creature that is mainly a vegetarian.

In South Carolina, muskrats sometimes build small huts out of marsh grasses, leaves, small sticks, etc. However, it is more common for them to dig bank tunnels and dens. The entrances to bank dens are generally 1 to 2 feet underwater and slope upward to the living quarters above water level.

MUSKRAT PROBLEMS

The habit of digging tunnels in the banks of ponds and streams causes conflict between man and muskrat. Muskrat dens dug into a farm pond dam could cause failure of the dam, and there is also danger of people and livestock breaking through the top of a tunnel and being injured. Riprap along the dam face can deter muskrats from burrowing into a dam. Riprap should be at least 3 feet below water level and extend to at least 1



Muskrat Sign

foot above the water level. This technique can be used for dams that are already constructed as well as for ponds under construction. Water control devices in dams should have a concrete apron to prevent muskrat burrows from compromising these structures.

Adhering to a few simple rules when constructing a pond can minimize future muskrat damage to pond dams. The dam should have a minimum width of 20 feet at water level and be well sodded to bind the soil together. A gradual slope (3:1) on the inner or pond side of the dam and a spillway large enough to prevent water from rising more than about 6 inches on the dam are desirable. This will discourage muskrats from burrowing into the dam, and less damage will be done if the animals select the embankment as a den site. Welded-wire or chain-link fencing (1" x 2") embedded into the dam or riprap along the dam face at

construction time will also act as a barrier to muskrat tunneling.

Another problem sometimes arises on lakes where the shoreline may be too rocky or shallow for muskrats to dig satisfactory dens. They often turn to floating docks where styrofoam presents a convenient tunneling site. Covering the sides with treated lumber and covering the exposed foam on the bottom with 1" x 2" welded wire can best protect the styrofoam (chicken wire is not strong enough and will be chewed and destroyed by muskrats). The wire should be galvanized or vinyl-coated to resist corrosion. Coating styrofoam with a light layer of cement, followed by paint, may also be effective.

Encapsulated floatation is often effective at deterring muskrats from burrowing and should be used on all new dock construction and renovations in areas where muskrats are known to occur. Typical

encapsulated floatation has a molded polyethelene shell over a polystyrene core. This type of floatation material is usually more environmentally friendly than styrofoam and may be required on docks in certain public lakes or waterways. Plastic drums can also be an effective muskrat-resistant floatation material for docks, but are often not as durable as other types of floatation unless filled with a water resistant inner floatation material.

HABITAT MODIFICATION

Muskrats can be beneficial to pond managers in that they can help to keep invasive plant species such as cattails from overtaking ponds. Open areas in cattail-infested ponds can allow for more desirable aquatic plants to invade the pond, increasing its value to other wildlife. Therefore, it may be advisable to keep muskrats in ponds where emergent vegetation is a problem so long as dams and other water control structures are not affected by burrowing activity.

It may be possible, however, to encourage muskrats to leave a pond by removing its food sources. Since muskrats are primarily herbivorous, an aquatic plant control program that targets some of their preferred foods may be enough to get muskrats to abandon the area in search of more suitable habitat. Plants containing less starch such as spike rush and leafy bulrush may have little to offer as far as the muskrat is concerned and may not need to be removed. If this type of habitat modification does not encourage muskrats to leave, most likely the animals will have to be removed by trapping.

MUSKRAT TRAPPING

Trapping is generally the most practical solution to a nuisance muskrat problem. The muskrat is classified as a furbearing animal in South Carolina, and may be legally trapped by persons with a commercial trapper's license from January 1 to March 1. Persons may trap problem muskrats at other times of the year, and without a commercial trapping license using a *depredation permit*.

The South Carolina Department of Natural Resources (SCDNR) maintains a Nuisance Wildlife Control Operators list of nuisance wildlife control specialists throughout South Carolina that will assist property owners with nuisance furbearer problems on a fee-contract basis. This list, as well as information on obtaining depredation permits, is available by contacting the SCDNR.

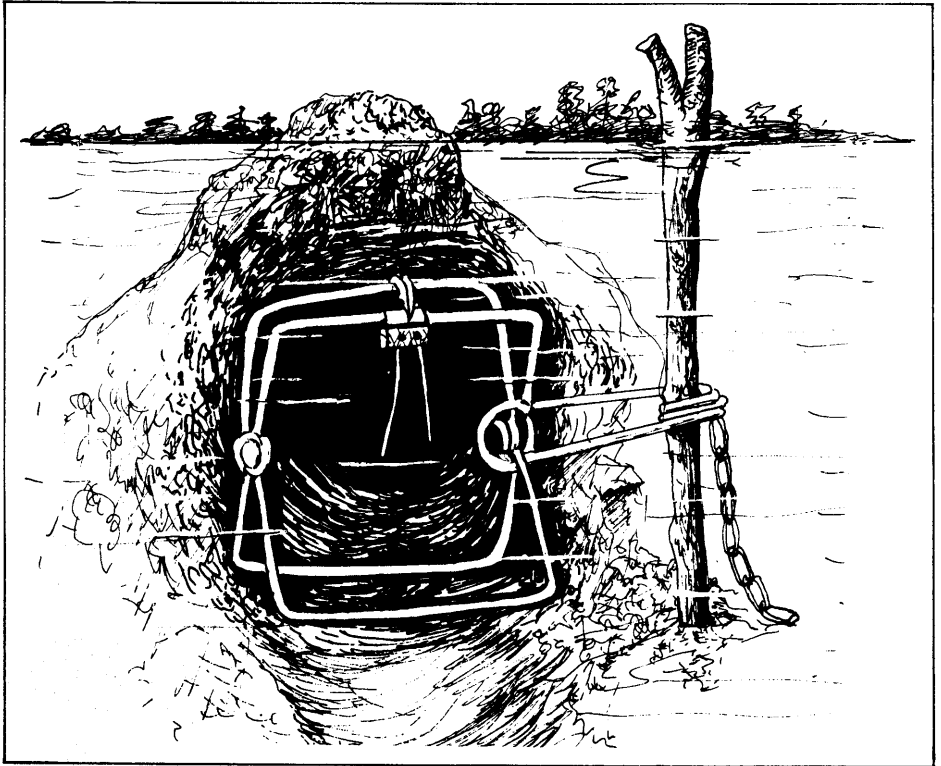
Conibear traps No. 110, 120 and foothold traps No. 1 or 1½ are those most commonly used for muskrats. Conibear traps may only be set in the water or in a well-used vertical slide and may not be used with bait or scents. Foothold traps may not be permitted in certain game zones. Check with the SCDNR before purchasing or setting traps.

There are many effective sets for trapping muskrats. The underwater entrance to a bank den is an ideal place to set a conibear trap. Wading along the edge of the pond or stream and probing the bank with a stick can often locate entrances. Make the set so that the muskrat must pass through the trap in order to enter or leave the den. Sticks should be used to stabilize conibear traps by wedging them within the trap springs. If placed outside the spring mechanism,

the sticks will impede the operation of the trap. Sticks and other materials placed around the trap site can help guide the animal through the trap so long as the trap function is not interfered with.

the trap trigger. Lures and scents are also effective.

Foothold or conibear traps can be placed at the bottom of a muskrat slide, just under the water. Slides are used over and over by muskrats as



Conibear 110 Set at Entrance to Den

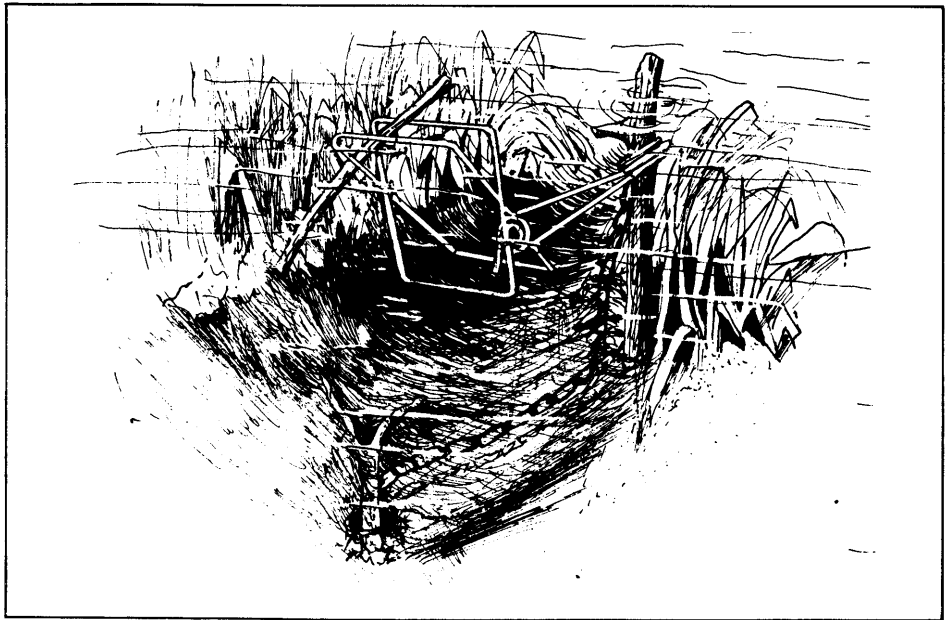
Foothold traps should be set for muskrats only where the animal will drown quickly. A trapped muskrat will head for deep water, and the weight of the trap will generally drown it. The trap should be chained to a stake driven in the ground in water at least 14 inches deep. A tangle or drowning stick driven near the trap stake will increase the effectiveness of the set. Foothold traps can be baited with a slice of apple or carrot on a stick over

they climb into and out of the water. Muskrats also use runways through thick aquatic vegetation and muddy stream bottoms as they swim to and from feeding places. A trap set in the middle of the runway will often be successful.

One of the most effective trap sets where muskrats are destroying boat docks is the floating log set. Foothold traps are set in notches cut on top of a log, and the chains stapled or nailed to the bottom of



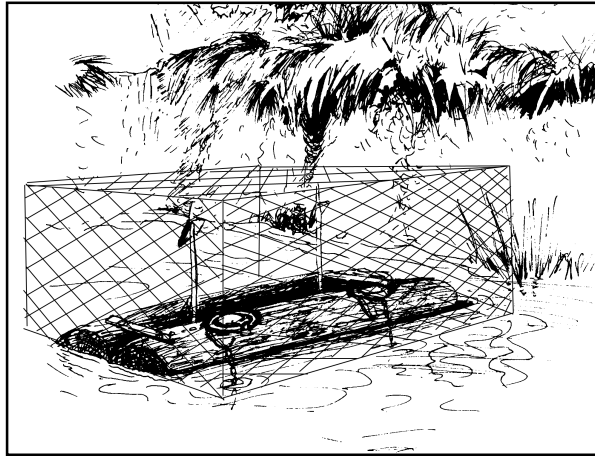
Slide Set



Runway Set

the log. The set can be baited, but muskrats like to crawl up on a floating object anyway. When trapped, the muskrat will dive off the log and be drowned by the weight of

Muskrats are a natural part of a stable environment. Unless they are causing serious problems, total elimination from the area should not be considered. Furthermore,



Floating Log Set
(shown with exclusion cage)

the trap. It may be advisable to cover the top and sides with a wire covering (such as hardware cloth) to act as an “exclusion cage.” This helps prevent capturing non-target animals. The cage must extend out at least 10 inches on the side(s) where traps are located so that muskrats can enter by going underwater and resurfacing inside the cage. It is often necessary for several adjacent dock owners to work together because removing muskrats around just one dock may only be a temporary solution.

There is usually some commercial demand for muskrat fur because of its soft, dense undercoat. Muskrats are relatively easy to skin, and pelts are worth about \$2 each. Professional trappers may be interested in buying pelts or whole animals from landowners. Also, the dark meat is good to eat.

complete elimination of muskrat in a given area may require considerable trapping effort. Due to their high reproductive ability, 75% of a muskrat population can be removed each year without impacting the overall population in an area. Overpopulation can lead to disease and habitat destruction problems.

Information on muskrats or other South Carolina furbearers can be

obtained by contacting:

S.C. Dept. of Natural Resources
Furbearer Program
P.O. Box 167
Columbia, S.C. 29202
(803) 734-3609

Written by Breck Carmichael
Wildlife Biologist

Updated by Jay Butfiloski
Wildlife Biologist

Edited by Victoria Buckingham
Illustrations by Bill Stroud

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