Muskrats

Prepared by the National Wildlife Control Training Program. http://WildlifeControlTraining.com
Research-based, certified wildlife control training programs to solve human – wildlife conflicts.
One source for training, animal handling and control methods, and wildlife species information.

Figure 1. Muskrat (*Ondatra zibethicus*). Photo by R. Town.

Species Overview

Conflicts

Muskrats can cause problems to aquaculture facilities and other aquatic environments by burrowing in dams, dikes, levees, and shorelines. Although primarily herbivores, they sometimes eat fish.

Legal Status

In South Carolina, muskrats are legally classified as a furbearer and can be taken by hunting or trapping during the open season. The season for trapping these animals is December 1 through March 1. Hunting season is Thanksgiving Day through March 1 on private lands with a valid hunting license. Anyone planning to trap muskrats should be familiar with the regulations which govern this activity. Information on these regulations can be obtained online at: http://www.dnr.sc.gov.

A nuisance muskrat can also be taken year-round with a **Depredation Permit**. A depredation permit is not required when controlling nuisance furbearers within 100 yards of a property owner's residence. This permit is issued by the S.C. Department of Natural Resources. To obtain a permit call your local wildlife management office or law enforcement field office.For further information: http://www.dnr.sc.gov.

Identification

Muskrats (*Ondatra zibethicus*, Figure 1) get their common name from the paired glands containing musk found beneath the skin at the base of the tail in both sexes. Muskrats secrete musk on logs or other areas of defecation, around houses, dens in banks, and trails on the bank to mark an area during breeding season.

Physical Description

Muskrats live in aquatic habitats and are well adapted for swimming. The large hind feet are partially webbed, with stiff hairs aligning the toes. The laterally-flattened tail is almost as long as the body. Muskrats have a stocky appearance, with small eyes and very short, rounded ears. The front feet, which are much smaller than the hind feet, primarily are used for digging and feeding.

Muskrats have upper and lower pairs of large incisor teeth that are sharpened continually against each other. The teeth are well designed for gnawing and cutting vegetation.

The color of the belly fur generally is light gray, silver, or tan. The remaining fur varies among

dark tan, red-brown, dark brown, and black. The average length of an adult muskrat is 18 to 24 inches. Large males sometimes are more than 30 inches long, including a 10- to 12-inch tail. The average weight of an adult muskrat is 1½ to 4 pounds, with most individuals weighing about 2½ pounds.

Species Range

The range of muskrats extends across most of North America except parts of the Southeast, Southwest, Texas, and Mexico. Muskrats have been introduced almost globally, and like many exotics, have caused severe damage and ecological problems.

Health and Safety Concerns

Tularemia and Tyzzer's disease are both bacterial diseases carried by muskrats. People can contract them by handling infected carcasses.

General Biology, Reproduction, and Behavior

Reproduction

Muskrats become aggressive during the breeding season, from October through April when they defend territories. Muskrats are sexually mature after 6 months. Copulation usually takes place while the animals are submerged. Most young are born from November to March, but some are born in the summer and early fall, 25 to 30 days after mating, in a house or bank den where they are cared for primarily by the female.

Muskrats have the potential for prolific production of young. In southern states, females can bear up to six litters per year. Litters may contain as many as 15, but generally average four to eight young. Young muskrats are vulnerable to predation, especially by owls, hawks, raccoons, mink, foxes, coyotes, largemouth bass, and snapping turtles. Occasionally, young are killed by adult muskrats.

Nesting/Denning Cover

In marshes, muskrats use vegetation to construct houses that are conical in shape (Figure 2). In creeks and ponds, they establish dens in banks if the banks are tall. In many habitats, they construct dens in banks and houses over water. Houses and dens have several underwater entrances via "runs," or trails (Figure 3). Muskrats often have houses for feeding, platforms, and chambers that are smaller than dens.

Behavior

Muskrats are active year round. They have small home ranges (100 to 200 yards), and defend territories. Dispersal of males and young that are sexually mature often begins in spring. Densities are impacted by availability and accessibility of food. Muskrats are nocturnal, but occasionally are active during the day.

Figure 2. House of a muskrat.
Photo by Stephen M. Vantassel.

Figure 3. Cross-section of a muskrat house with a tunnel leading to water. Image by Prevention and Control of Wildlife Damage (PCWD).

Habitat

Muskrats are found in streams, ponds, wetlands, swamps, drainage ditches, marshes, canals, ponds made by beavers, mine pits, lakes, and other wetlands throughout the US and Canada. Muskrats can live almost any place where water and food are available year-round.

Food Habits

Muskrats are primarily herbivores. They eat almost any aquatic vegetation and some crops in adjacent habitats. Preferred foods include cattail, pickerelweed, bulrush, smartweed, duck potato, horsetail, water lily, sedges, young willows, and other aquatic vegetation. Crops that are occasionally consumed by muskrats include corn, soybeans, wheat, oats, grain sorghum, and sugarcane. Rice grown as a flooded crop is a common food of muskrats.

Muskrats sometimes will feed on crayfish, mussels, turtles, frogs, and fish.

Voice, Sounds, Tracks and Signs

Young muskrats squeal when disturbed. Muskrats may “chirp” or “whine” to signal each other, or slap their tail on the water to alert other individuals.

Tracks and trails of muskrats can be found on muddy banks. Scats often are tubular with rounded ends and 3 times longer than they are wide. Average width is 0.2 inches. Scat frequently is deposited on rocks and fallen trees near water.

Damage Identification

Damage to Landscapes

Muskrats may raid gardens near water sources. Look for cut vegetation floating in water. Runs and burrows, along with remains of mussels, crayfish, or fish are easy to observe. Look for and tracks or droppings

Damage to Crops and Livestock

Muskrats may raid crops near water sources. Cut vegetation floating in water is a sign of muskrat activity, along with tracks and droppings.

Damage to Structures

Muskrats occasionally damage structures such as floating Styrofoam® marinas, docks, and boathouses. Muskrats burrow in dams, embankments, and levees, which can lead to flooding. Evidence of burrowing may not be detected until serious damage has occurred.

Damage Prevention and Control Methods

Habitat Modification

The best way to reduce the attractiveness of an area to muskrats is to eliminate aquatic vegetation and other food plants. Plant crops at least 200 yards from ponds and waterways used by muskrats.

If banks of ponds, dams, or levees are being damaged, reduce damage by drawing the pond down at least 2 feet below normal levels during the winter to expose dens. Fill dens, burrows, and runs, then rip-rap the banks, dams, and levees with stones at least 6 inches thick, 3 feet below the waterline, and 1 foot above the water line (Figure 4). After the water is drawn

down, trap or otherwise remove all muskrats. When serious damage is anticipated, overbuild dams to reduce susceptibility to muskrats.

Figure 4. Rip-Rap along a pond embankment can significantly reduce muskrat damage.
Photo by Stephen Vantassel.

Exclusion

Install fences made of 1-inch mesh where muskrats are leaving a pond or lake to cut valuable plants or crops. Protect dams and embankments by installing 1-inch galvanized mesh or sheets of Xcluder™ fill fabric on the impoundment side of the dam or embankment. Mesh should extend 3 feet below and 1 foot above the level of the water.

Frightening Devices

No frightening devices are effective for the control of muskrats.

Repellents

No repellents are registered for the control of muskrats.

Toxicants

The only toxicant that is federally registered for controlling muskrats is 63% zinc phosphide concentrate. It is a restricted use pesticide (RUP) for making baits, and can only be purchased and used by a licensed applicator.

Zinc phosphide baits for muskrats are made by applying a sticker of vegetable oil to cubes of apples, sweet potatoes, or carrots. Apply zinc phosphide to the bait and thoroughly blend the mixture. Place bait on floating platforms, in entrances to burrows, or on houses used for feeding. Use caution when mixing and applying baits treated with zinc phosphide, and carefully follow all instructions on the label. Zinc phosphide is not legal in all states. Check local and state regulations before use.

Shooting

Legal hunting season on private lands in South Carolina for muskrats is Thanksgiving Day through March 1. A free depredation permit for nuisance muskrats may be issued to landowners who do not possess a hunting license. Go to www.dnr.sc.gov for additional information.

Trapping

In South Carolina, the legal trapping season is December 1 – March 1 for licensed trappers, however a private landowner may apply for a free depredation permit outside of the regular trapping season or if they do not have a trapping license. Permits can be obtained from any South Carolina DNR office or conservation officer.

Furbearer Trapping regulations can be obtained online at www.dnr.sc.gov.

Muskrats are probably the easiest aquatic furbearer to trap. Trapping is an effective, practical, and environmentally safe method of control. Several methods and types of traps are effective, depending on the situation. The effectiveness of trapping depends on the knowledge of the trapper and the ability to read muskrat signs, recognize food preferences, select the appropriate traps, and place traps in the appropriate sets. Traps should be checked daily.

Disposition

Relocation

Relocation of muskrats is not permitted in South Carolina.

Translocation

Translocation of muskrats is not permitted in South Carolina.

Euthanasia

Most trapping techniques kill the muskrat. Carbon dioxide is a suitable technique for euthanasia, as is a sharp, well-placed blow to the head.

Resources

Government or private agencies, universities, extension service.

Web Resources

http://dnr.sc.gov

http://wildlifecontroltraining.com

http://icwdm.org/

http://wildlifecontrol.info