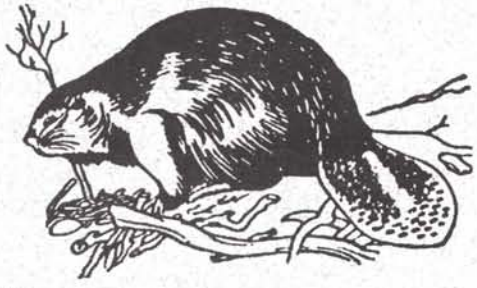
Lake Notes

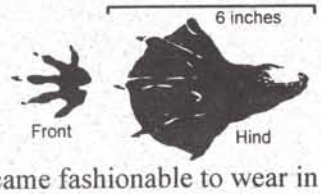
# Beavers and Muskrats

The beaver (*Castor canadensis*) is the largest North American rodent, averaging between 50 and 65 pounds. It is easily identified on land by its flat tail, brown fur coat, and large front teeth. When it enters the water, however, the beaver is more difficult to identify and may be confused with the muskrat (*Ondatra zibethicus*) which also has a brown fur coat, yet is much smaller (averaging 2 to 4 pounds). Both of these species are common throughout most of North America and are found in and near aquatic environments. This issue of *Lake Notes* discusses these two mammal species, their habits and habitats, and methods for managing these potentially bothersome creatures.

## Beavers

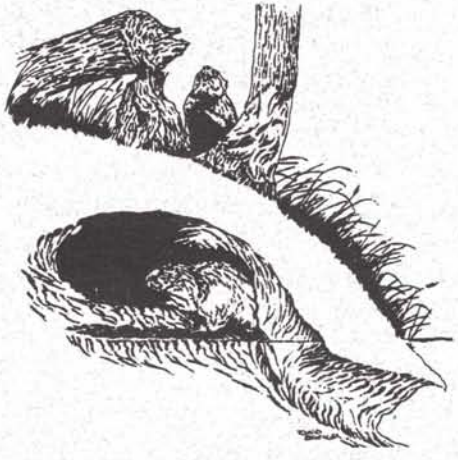


Beavers and humans have coexisted in Illinois for approximately 10,000 years. Surely their fur and meat were put to use by Native Americans for much of that time. In the 1700s and 1800s, however, beaver fur became fashionable to wear in Europe and North America, and they were subsequently trapped out of existence in Illinois. Following successful beaver reintroduction projects between the 1920s and 1950s, and the absence of many natural beaver predators, their populations have recovered. Beavers now inhabit many of their historical ranges.



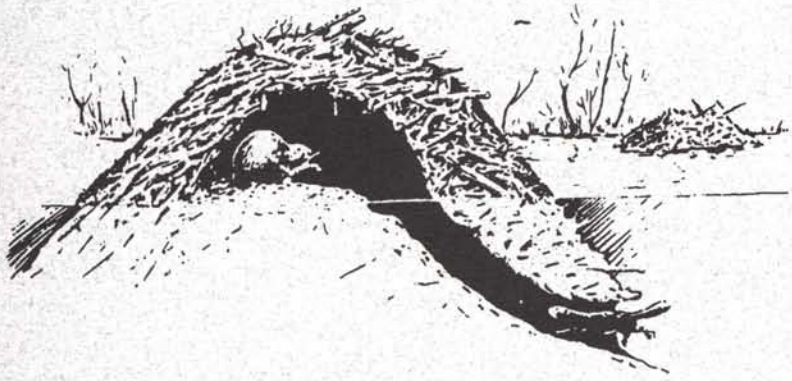

### *Habit and Habitat*

The beaver is well adapted to aquatic environments. Like a duck, its webbed hind feet help propel this streamlined mammal through the water. Steering is accomplished partly by the scaled, hairless, flat tail. The tail also is used to warn other beavers of danger by slapping it against the water. Its nose and ears are *valvular*, that is, they close to prevent water from entering. The beaver's lips meet behind its large front teeth to prevent water from entering the mouth while allowing the beaver to chew underwater vegetation. The beaver's teeth grow continuously and are ideal for gnawing wood. Without the gnawing action to wear them down, these teeth would grow large enough to obstruct the mouth and prevent the beaver from eating. Though the size of their teeth may be intimidating, beaver do not bite and are not aggressive unless threatened.



Beavers are found almost anywhere there is a year-round source of water with adequate food and lodging sites such as lakes, streams, and wetlands. Where the water is deep enough, and where the banks of the waterbody are high enough, beavers often will dig out a den in the bank. Where these conditions are not present, beavers will create their own ideal habitat by blocking flowing water with dams and creating "beaver ponds."

If building a bank den is not possible, beavers will build lodges to provide shelter and a place for raising their young. The water provides protection from predators, closer access to food sources, and a place to store their winter food supply. Deeper water also ensures that entrances to the beaver den or lodge are not frozen-over during the winter months. An added benefit of ponded water is the aquatic habitat that is created for fish, waterfowl, and other wildlife.



As water backs up behind beaver dams, aquatic vegetation as well as bottomland species such as willow, sweetgum, and buttonbush, begins to grow, providing food for the beaver. Other preferred foods include the young twigs and inner bark of aspen, cottonwood, blackgum, black cherry, and tulip poplar. In the absence of these species, beaver will eat the leaves, twigs, and bark of many other plants. Most feeding, as well as other activities, occurs at night and during twilight hours. However, beavers also may be active during the day.

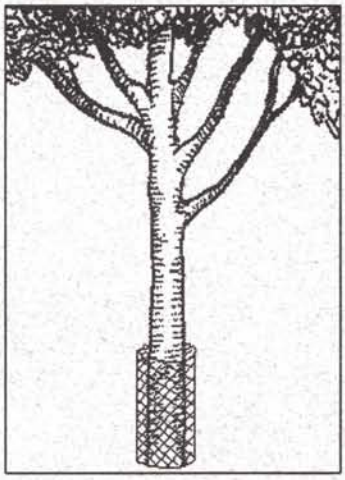
## Beaver Damage

Though beavers may enhance habitat for themselves and other wildlife, their activities also pose a potential nuisance for humans. Most of the damage associated with beavers is caused by the cutting and girdling of trees which leads to their death, building of dams and the resultant flooding, and burrowing into banks. (Contrary to popular belief, beavers will use almost anything to build a dam including fence posts, lumber, fibrous material, rocks, and metal.) Trees are not only aesthetically valuable to landowners, but beaver-caused flooding has killed whole commercial forests. Beavers also have been known to plug road culverts with brush, causing flooding of homes, highways, and cropland. Beavers also may cause damage to floating boat docks: since lake shorelines are often not steep enough for a bank den, beavers may create living space by hollowing out the plastic foam flotation material.

## Beaver Management

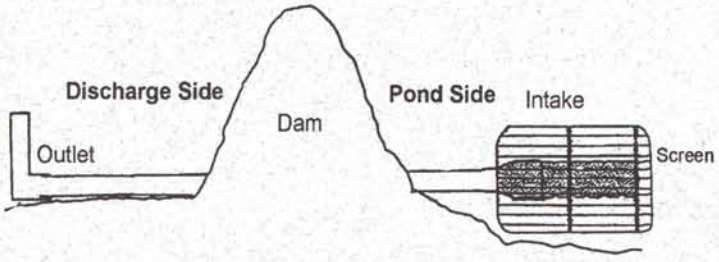
Landowners who believe they have a beaver problem should first consider whether the damage is serious enough to warrant control measures. Controlling beaver activity is only allowed for beavers causing significant damage. Otherwise, beavers are protected and should not be bothered. If the damage is not serious, the best approach may be to learn to live with them. However, if damage is serious enough for action, beaver control should begin promptly because established beaver colonies are very difficult and potentially costly to remove. Control is especially difficult where nearby preserves or other protected natural areas provide refuge for these animals.

A number of approaches are recommended for managing problem beavers. One technique is to prevent beavers from accessing an area in which they could cause damage. Excluding beavers from water features is nearly impossible, as is fencing them out of large areas of land. Protecting individual trees, however, can be easily accomplished by wrapping four inch or smaller wire mesh, metal sheeting, or heavy gauge hardware cloth around the trunk to a height of about three feet. Be sure to provide enough space between the tree and the protective material so that the tree can continue to grow, and never nail the material to the tree directly. A more intensive fix is to eliminate the beavers' food and dam-building sources altogether by removing trees and other woody vegetation, yet this can lead to significant erosion of streambanks and shorelines.



Beavers are stimulated to build dams by the sound and movement of running water. Thus, physically removing beaver dams is not recommended because this can merely cause beavers to rebuild or to move to a different location nearby where they could be even more troublesome.

To address flooding problems, one approach is to lower the level of the ponded water behind the dam, while still leaving the dam and some beaver habitat intact. This can be accomplished with a Clemson beaver pond leveler, also known as a beaver tube, or a similar device that transports water through or under the dam (see figure below). The Clemson leveler consists of a perforated pipe encased in heavy mesh or other sieve-like material placed in the pond, which is attached to a non-perforated pipe that moves the water to the other side of the dam. The downstream end of the pipe should be constructed so that the beavers cannot detect the sound of running water, which may stimulate them to stop the flow by plugging the pipe. If the beavers cannot keep the water level of the pond high enough, they may become discouraged and move to a new site.



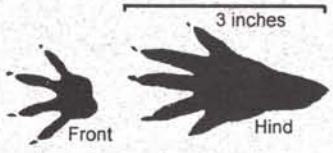

Dock owners can protect their docks from beavers by covering the flotation material with wire mesh, by replacing the flotation structures with other beaver-resistant flotation material, or by trapping and removing problem beavers.

Live trapping and removal is a control method, but it may prove to be only a temporary fix since new beavers often will recolonize an area from which other beavers were taken. Trapping requires knowledge of beaver habits, food preferences, and trap placement. Anyone interested in trapping should be familiar with the Illinois statutes regulating trapping of fur-bearing animals. These regulations stipulate when trapping is allowed and specify the size, type, and placement of traps. However, it is best handled by a trained professional, especially since handling traps and trapped beavers can be dangerous. Traps also present a danger to desirable wildlife species and some pets. Humane types of traps capture the beaver in a box or cage without harm and allow the trapped animal to be removed and relocated. Finding a release site may be difficult, however, since landowner permission is required. Shooting beavers is strictly prohibited by state law, as is the use of pesticides and other poisons.

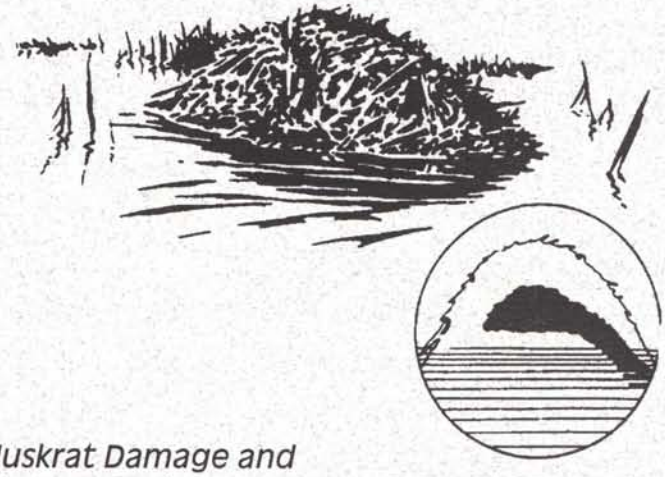
# Muskrats

## *Habits and Habitat*

The muskrat (*Ondatra zibethicus*), with its partially webbed feet and round, rudder-like tail, also is adapted to aquatic environments. A rodent like the beaver, it can be found across most of North America in almost any type of aquatic habitat including streams, wetlands, and lakes. The name is derived from the musk glands near the animal's tail that are used to mark territory and attract mates.




Muskrats eat almost any aquatic vegetation, but they prefer cattail, bulrush, water lily, sedges, and young willow. They also will consume some upland plants and even some field crops, especially rice. If vegetation is not available, they will eat crayfish, frogs, and other aquatic animals. Like beavers, muskrats dig dens into streambanks and shorelines or use vegetation (especially cattails and rushes) to construct their dens. Their dens are usually domed structures with several underwater entrances. Muskrats do not typically create ponded water conditions.



## *Muskrat Damage and Management*

Some rice crops have been damaged by muskrat burrowing, eating, and building activities. Most damage associated with muskrats is due to their burrowing activity in streambanks and shorelines or in constructed earth levees or dams. They also are known to undermine floating docks by burrowing into

floatation materials. Muskrats dig burrows just large enough to create a suitable den for shelter and rearing their young. In small earthen dams, a burrow can reduce the dam's structural integrity enough to risk dam failure.

To prevent damage in larger dams, the following specifications can allow enough room for a den while maintaining the dam's structural integrity. The upstream face of the dam should be built with a 3:1 slope, and the downstream face with a 2:1 slope. The top of the dam should be 10 to 12 feet wide, and the water level behind the dam should be at least 3 feet below the top of the dam at normal levels.

Muskrats can sometimes be prevented from burrowing in streambanks and shorelines by stone rip-rapping those areas needing protection. However, other issues such as cost, an unnaturally hard edge, and loss of natural aesthetics will need to be considered when using this alternative. If necessary, rip-rap is most easily installed during pond construction or by lowering the lake or pond water level before placing the rip-rap.

Placing fencing around areas needing protection also has been effective in some situations, as has removing the muskrat's food source. However, these methods merely force the muskrat to relocate and become a problem elsewhere.

Across the nation, muskrats are the most valuable fur-bearing mammal. Muskrats are probably the easiest fur-bearing aquatic mammal to trap, but restrictions similar to beavers apply. Muskrat trapping season begins in early November and ends in mid-January so that no babies or mothers with dependent young are taken.

It is possible to control a muskrat problem with its primary natural predator, the mink. This technique, however, will usually stabilize a muskrat population rather than eradicate it. Shooting muskrats is strictly prohibited by state law, as is the use of pesticides and poisons. As with beaver, it is best to contact a qualified professional when trapping is a consideration.

## Assistance

The Illinois Department of Natural Resources (217/782-6384) provides technical assistance and information on management issues; they will not provide control or other field assistance. Landowners seeking help with problem wildlife should consult their local telephone directory under "Pest Control" or "Animal Control." Some local governments also provide animal control services.

*Lake Notes . . .* is a series of publications produced by the Illinois Environmental Protection Agency about issues confronting Illinois' lake resources. The objective of these publications is to provide lake and watershed residents with a greater understanding of environmental cause-and-effect relationships, and actions we all can take to protect our lakes.

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