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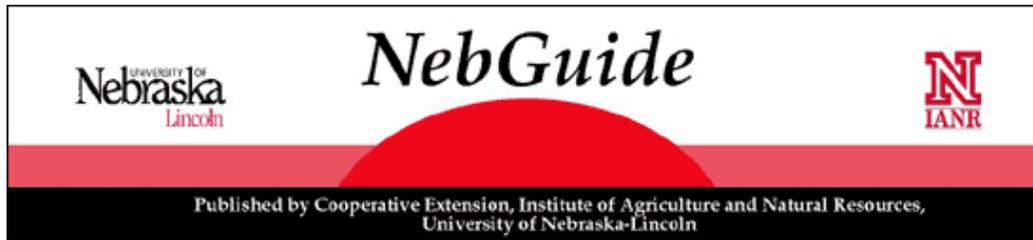


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Controlling Beaver Damage

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This NebGuide describes beaver biology and behavior and characterizes the types of damage caused by them. It suggests control methods and equipment and describes legal restrictions.

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Biology, Behavior and Reproduction

**Figure 1. A rare occurrence of a beaver on land during midday
(Photo Credit: *Nebraskaland Magazine*, Nebraska Game and Park Commission)**



The beaver (*Castor canadensis*) is the largest rodent in North America. Adults weigh about 40 pounds and have been known to weigh up to 60 pounds or more. Beavers are admired for being industrious, curious, and social. Historically, both the American beaver (*Figure 1*) and the European beaver (*Castor fiber*) were overharvested to near extinction. In recent decades, however, both species have been rapidly increasing.

The beaver has specialized aquatic features such as webbed feet, nostrils and ears that can close under water, membranes that cover the eyes under water, and a broad, flat, scaly tail. A large liver enables the beaver to store much oxygen in its blood allowing it to remain under water for up to 20 minutes. Paired anal scent glands called "castors" are better developed in males but occur in both sexes.

The large front incisors of beaver grow continually throughout its life. These incisors are bright orange on the front and are continuously sharpened as they cut and girdle trees. Beaver are nocturnal and often begin their activities shortly after sundown. Beavers are vegetarians, feeding on woody plants during the fall and winter.

In spring, beaver switch to green and leafy vegetation.

Beavers begin breeding during January and young are born 100 to 120 days later. A single litter usually consists of three or four young. The young kits begin eating leafy material at about six weeks of age. Beavers usually become sexually mature at two years old, at which time they may establish new colonies. The beaver colony is a family comprised of two to 10 animals. Most beaver are four years old or less but some can live up to eight years.

Where present, river otter and wolves are the most important predators of beavers. Coyotes, bobcat, and large birds of prey occasionally kill young beavers. The beaver uses its flat tail to warn other beavers of danger by slapping the water surface before diving.

Signs of Beaver

Dams

Beavers cut limbs and whole trees to build dams (*Figure 2a*), usually using 2- to 4-inch diameter woody limbs and mud. Occasionally, rocks and plant stalks are used. Dams are typically a few feet long but can be hundreds of feet long.



Figure 2a. Beaver dam.(Photo Credit: Ronald Fryda)



Figure 2b. Beaver lodge.



Figure 2c. Beaver bank c

Beavers may live in a dome-shaped lodge built of limbs and logs (*Figure 2b*). These may be 6 feet high and up to 40 feet wide. The lodge is built either in a natural pond or in a body of water created by the beaver's dam. In Nebraska, beavers usually dig and live in burrows in the banks of ponds, lakes, or streams. The entrance to the lodge or the bank den is usually under water with the floor inside several inches higher than the water level. Bank entrances may be exposed during periods of low water (*Figure 2c*).



Figure 3. Beaver shavings on young trees.

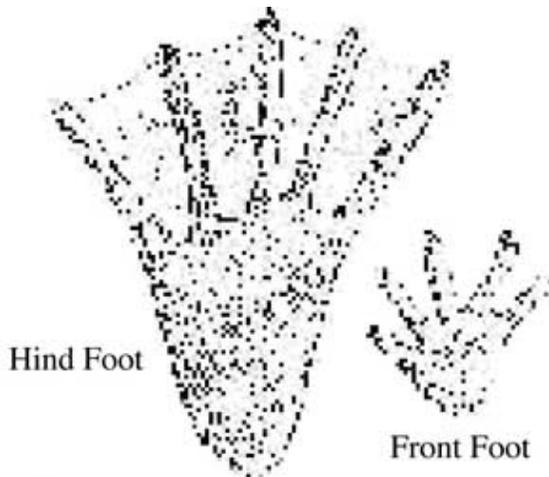


Figure 4. A beaver trail (Photo Credit: Ronald Fryda) and a beaver slide



Signs of beaver include cuttings from trees that produce wood chips. Beavers also shave off tree bark (*Figure 3*). Beavers produce scent from their castor glands that creates a reddish stain on mounds of grass and mud that they build at the water's edge. Occasionally, a slick surface on the bank is made as beavers slide into the water. Beavers also clear trails through vegetation that grows out of shallow water (*Figure 4*). Sometimes, beaver runways can be seen at the bottom of clear water ponds.

Figure 5. Beaver tracks.(Illusration by Kim A. Cabrera)



Beavers like to eat birch, cottonwood, willow, aspen, alder, maple, and dogwood. Also eaten are water lilies and growing corn, soybean, wheat, carrots, potatoes, apples, clover, and alfalfa. Beavers prefer to fell small trees from 2 to 6 inches in diameter. Limbs up to 5 inches in diameter are stored in dams or in front of bank dens where they will be peeled for food and eaten later in the winter.

Beavers have large webbed hind feet and produce tracks to six inches in length. A tail mark is sometimes produced in soft mud (*Figure 5*).

Damage Caused by Beaver

Beavers are one of very few animals that can greatly alter their immediate environment to suit their needs. Beaver activity can create very large areas of deep standing water where once only shallow, moving water existed. Other plants and animals adapted to pond life and the associated wetlands that beaver create may quickly move into the areas. One should weigh the environmental benefits of such ponds and wetlands against the damage caused by beaver flooding and/or eating crops and ornamentals.

Girdling and felling trees

Trees up to 3 feet in diameter can be felled and larger trees can be girdled. Girdling removes the bark completely around a portion of a tree trunk, killing it. Even partially girdled trees can suffer.

Flooding crops, timber, and damaging structures

Most of the flooding damage caused by beavers is the result of an innate behavior beaver have to try to stop running water. They do this by carrying limbs and other material to a constricted area of water flow. This causes problems around culverts, overflow pipes, and other water conduits. Most beaver damage is caused by this behavior and by dam-building activities. Occasionally, some bank dens cause damage when they undermine the integrity of water-holding structure. Bank dens also can collapse under the weight of farm equipment, causing significant damage to machinery.

Figure 6 .Use of explosives to remove beaver dam and control potential undermining of a trsettle(Photo Credit: Ronald Fryda).



Pastures and crops can be flooded by ponds created by beavers. Beaver ponds can be from a few to dozens of acres in area. One study estimated annual \$22 million losses to the southeastern U.S. timber industry due to flooding by beavers. Beavers occasionally compromise the integrity of levies, dikes, roadways, bridges, and trestles (*Figure 6*). They also can plug culverts and drainage ditches causing flooding to roads.

Control Strategies

Control strategies may take two forms. These are 1) controlling beavers at acceptable population levels and 2) removing local beaver populations and preventing recolonization. Beavers can rapidly colonize excellent habitat or recolonize habitat where beavers have been removed. They have been known to travel miles to new areas.

During the fall and winter, mature beavers are likely to move if their present habitat does not have enough woody food. In excellent and abundant habitat, long-term beaver control includes monitoring for and removing immigrant beavers.

Beaver dams should not be removed or breached until beavers have been removed from an area. Breaching the dam without first removing beavers will disrupt the beaver's established movement patterns and make trapping more difficult.

Permits

Special depredation permits from the Nebraska Game and Parks Commission are required to take beavers outside the fur harvest season. USDA Wildlife Services may be available for hands-on assistance in certain cooperating counties in Nebraska. Nebraska Game and Parks Commission maintains a list of private trappers who may be willing to do depredation work to limit or reduce local beaver colonies.

Non-lethal Control and Habitat Modification

Exclusion

You can keep beavers away from ornamental plants or landscape trees or from small areas by using hardware cloth, screens, metal flashing, grit paint, or chain link fence. Exclusion is rarely used to prevent large-scale timber or forest damage.

Using fences or screens to block beavers from entering culverts and drain pipes may still allow them to place dam materials against the pipe. Using wire mesh culverts may be an inexpensive and efficient way to allow water flow through such materials.

Constructing concrete spillways may reduce or prevent damage to dams caused by burrowing beavers. Rip-rap also can be used on earthen dams or levees. Electrical barriers, which produce an electrical field, have limited but proven use in ditches and other narrow water channels.

Beaver pipes

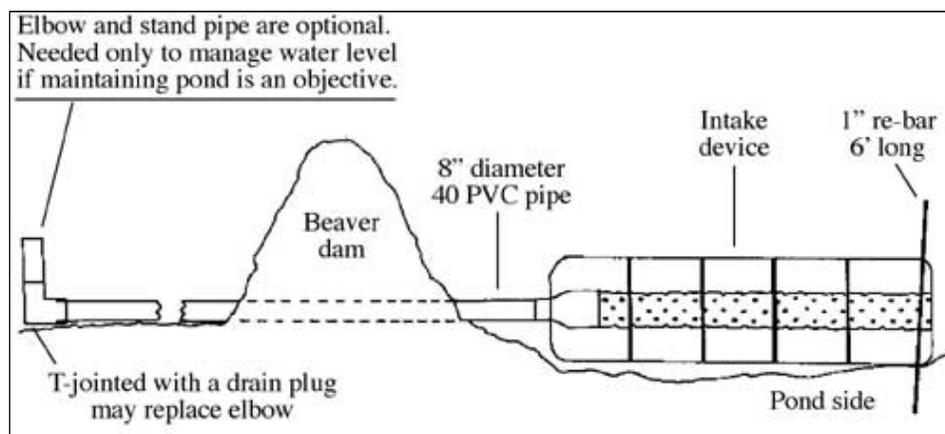


Figure 7. A Clemson pond leveler (Illustration by Renee Lanik).

Several different designs of "beaver pipes" are available (*Figure 7*). All are designed to allow people, rather than beavers, to control the water level. The pipes are perforated and allow water to flow through the dam. The upstream end of the pipe is protected with large wire mesh to keep beavers from plugging the pipe.

Unfortunately, research indicates that only half of the beaver pipes are effective and many are swept away during floods or fail due to plugging by beavers.

Repellents

You can place a mixture of alkyd paints mixed with clean, coarse sand on tree bark to repel beavers. Research by the National Wildlife Research Center suggests that an effective mixture of sand and paint is at a rate of about 4 ounces of mason sand per one quart of paint.

Live Trapping and Translocation

Cage traps, snares, leg-hold traps and specialized clam-shell (Hancockr, Baileyr) traps can be used to capture beaver alive for translocation. Translocation is rarely positive because the newly introduced beavers may cause damage in the relocation areas or they will again move to areas where they are unwanted. Several professional veterinarian and epidemiologist groups oppose translocating mammals because of the risk of disease transmission.

Lethal Beaver Control

Trapping remains the most effective method of removing beaver from specific damage areas. Intensive trapping can eliminate or greatly reduce beaver populations in limited areas.

Body grip kill traps

These, like the Conibearr, are designed to cause the quick and humane death of beavers (*Figure 8*). Body grip traps are best used during the spring, summer and fall. In Nebraska, traps having a jaw spread greater than 8 inches may be used only in underwater sets to catch beavers. You can place the body grip trap in beaver runways or at lodge burrow entrances. Body grip traps, when used correctly, present little risk to nontarget animals.

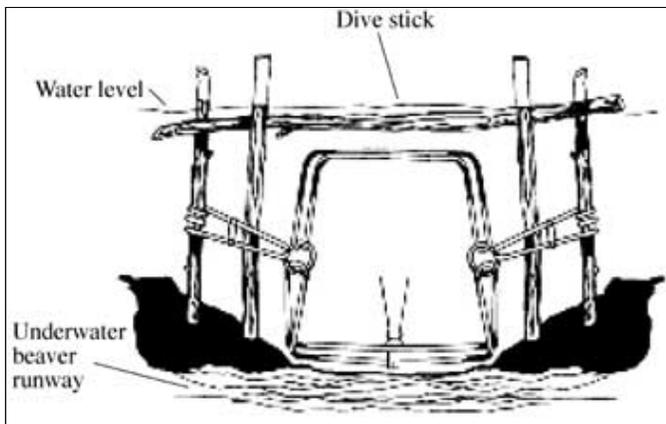


Figure 8. An underwater set of a body grip trap (Illustration by Renee Lanik).

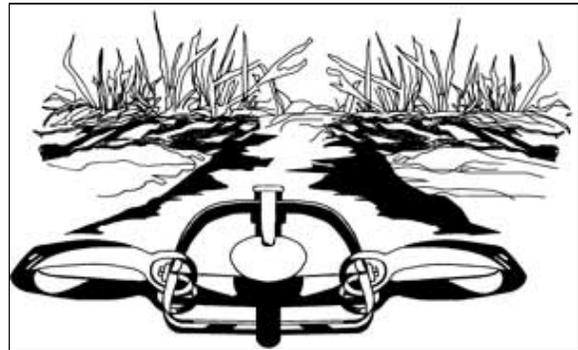


Figure 9 . A leg-hold trap set under water (Illustration by Renee Lanik).

Leg-hold traps

Leg-hold traps are either placed near or in active runways of beaver (*Figure 9*). Effective and safe trapping requires knowledge of the habits of beaver, habitat conditions, and presence of nontarget animals as well as knowledge of the trap and lures. Leg-hold traps may be set to allow for the on-site release or relocation of animals.

Snares

Snares can be set to catch an animal either around the body or around the leg. Snares are a cable formed into a loop with a locking device and are placed in beaver runways or at lodge entrances. Most snares have a swivel

to reduce cable twisting and breakage. As much knowledge is needed to effectively snare an animal as it is to trap it.

Spotlighting and Shooting

Using either a shotgun or a rifle is effective where trapping is not feasible and the intent is to remove a small number of animals. The shooting method sometimes can provide immediate relief from a problem. Shooting is best used by trained professionals.

Toxicants

No toxicants are registered for use on beaver in the state of Nebraska.

Beaver Dam Breaching and Explosives Use

Breaching is used to clear impediments to water flow but should be used only after beaver have been removed from the area. Breaching is used to maintain existing stream channels and drainage patterns, and reduce flood waters that have affected agriculture and ranching activities. Unwanted beaver dams can be removed by hand with a rake or power tools (e.g. a winch or backhoe), or with explosives. Explosives are used to breach beaver dams after beavers have been removed from a damage situation. Explosives are used only by USDA Wildlife Services personnel who are trained and certified to conduct such activities. For further information on explosives use, contact USDA Wildlife Services at (402) 225-7301.

Legal Status

Beavers are classified as furbearers in Nebraska. Outside of furbearer seasons, beavers may be trapped only after the issuance of a permit from the Nebraska Game and Parks Commission. Information for current furbearer seasons and regulations is available from local Nebraska Game and Parks Commission offices.

Additional Sources of Information

The book "Prevention and Control of Wildlife Damage" contains a directory of manufacturers, formulators, and distributors of beaver control products and supplies. The two-volume handbook and CD-ROM is available at 202 Natural Resources Hall, University of Nebraska, P.O. Box 830819, Lincoln, NE. 68583-0819. The Internet Center for Wildlife Damage Management at <http://wildlifedamage.unl.edu/> has more information about beaver control and the USDA Wildlife Services state office at (402) 434-2340 can provide public assistance.

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