



MUSKRAT CONTROL IN FARM DUGOUTS

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IMPACT OF MUSKRATS ON WATER QUALITY

Musk rats can have a negative impact on water quality in farm dugouts. Musk rats will often tunnel into the sides of dugouts to create burrows. Both tunnelling and harvesting of plants for food disturb the sediments.

When the sediments are disturbed, turbidity increases and nutrients are released into the water. Turbidity reduces the clarity of the water and can clog treatment filters. Increased nutrients in the water can lead to unwanted algae blooms. Tunnelling can also cause dugout leakage and bank erosion.

Musk rats are also carriers of some disease-causing organisms such as *Giardia* and *Cryptosporidium*. Both organisms are intestinal parasites. Drinking water with *Giardia* can lead to giardiasis, an illness commonly referred to as "Beaver Fever". It can cause severe diarrhea in humans.

Cryptosporidiosis or 'crypto' is caused by the organism *Cryptosporidium*. It also results in diarrhea, although in this instance diarrhea can be bloody. Serious blood infections or even death can occur in people due to a crypto illness.

Since muskrats can carry parasites that will infect humans, it is important to keep them out of domestic dugouts. It is also important to understand what makes a muskrat behave the way it does. Knowing the background on muskrat habits will make it easier to deal with them.

DESCRIPTION AND DISTRIBUTION

Musk rats (*Ondatra zibethicus*) are large rodents related to Old World rats and mice. They are stout, stocky animals



The common muskrat has been shown to contribute parasites to farm dugouts.

Photo credit: Ducks Unlimited

weighing two to five pounds as adults. Their ears are short and their long, flattened, scaly tail make them easily identifiable.

Musk rats are able to close their lips behind their front teeth. This prevents them from swallowing water while they gnaw at the roots of aquatic plants. They can stay underwater for up to 15 minutes and are excellent swimmers.

Musk rats are common in all Canadian provinces and parts of the Territories, and are classified as furbearers.

MUSKRAT BIOLOGY

Musk rats are semi-aquatic animals that prefer still or slow-moving water. They are active year-round. While they are most active at night, they may also move around during daylight hours. They live in either tunnelled burrows or in crude houses constructed of aquatic plants. Their home range is usually within 180 metres (200 yd.) of the burrow, although they will travel many miles over land in search of new habitat.

Musk rats have high reproductive rates, and may produce two to four litters per year. Females are capable of giving



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birth at one year of age. Average litter size is six young. They breed from February to August and will give birth from March to September, usually peaking in May. Pregnancy lasts 20 to 30 days and the young are born blind and helpless. Their eyes open after about two weeks. At about eight weeks they are weaned. Life span is three to four years. The animals are very independent and mobile. They will move to colonize a new location shortly after weaning. This may be a different spot in the same dugout, or at a new dugout altogether.

Muskrats are primarily vegetarians. They feed on the roots and stems of most aquatic plants, such as cattails and rushes. They will also eat grasses, grains, legumes, garden crops and apples if the food sources are within 180 m (200 yards) of the water. Over winter when plant material is scarce, muskrats may feed on other aquatic organisms such as snails and clams. They have been known to eat dead animal matter.

CONTROLLING MUSKRATS IN DUGOUTS

There are two strategies available to control muskrats in dugouts. The first approach is to make the dugout uninhabitable for muskrats. The second approach is to eradicate the animals.

Habitat Modification

Muskrats may be discouraged from entering or staying in a dugout if it looks like a bad place to live. Removing food sources is a good first step. Remove as many

rooted aquatic plants as possible and compost them at least 180 metres (200 yd.) away from the dugout. Ensure that the dugout edges are sown with short-grass species or cut to no more than 10 cm (four in.) in height.

Burrowing can be made more difficult by placing rip-rap along the edges of the dugout. The rip-rap should be about five cm (two in.) in size. Apply it so that it is at least 15 cm (six in.) deep. Place it in a layer that runs from 30 cm (one ft.) above to 90 cm (three ft.) below the water's edge.

A layer of one or 2.5-5 cm (two in.) mesh chicken wire can also be used. Anchor the wire every few feet to prevent lifting. Chicken wire will eventually have to be replaced as it corrodes.

Ducks Unlimited has had good success with their muskrat exclusion fence. It consists of a sturdy, mesh screening held up with T-bar. The T-bar is pounded into the ground at regular intervals. At a point about one-third from the top, the bar is torch-heated and angled away from the water. Screening is then fastened to the bars and trenched about 15 cm (6 in.) into the soil at the bottom. Total fence height is about 90 cm (three ft.).



A wire mesh fence has been used to keep muskrats out of wetlands.

Photo credit: Ducks Unlimited

Eradication of Existing Muskrats

Muskrats can be destroyed by the landowner when they damage personal property. It is important that you contact your local wildlife officer regarding regulations and permits required for such activity.

- In B.C., call the local Conservation Service District Office for permission.



A typical Prairie dugout edged with cattails. Removing aquatic vegetation is one step towards preventing muskrat invasions.

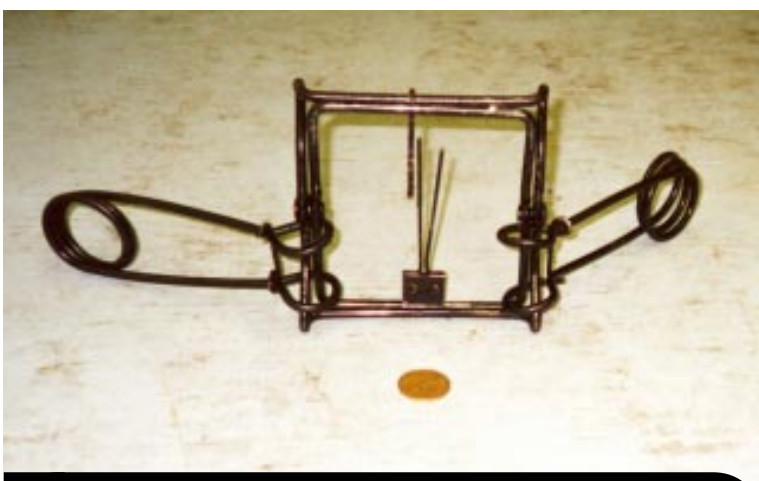
- In Alberta, obtain a damage control permit from the local Alberta Environment Office.
- In Saskatchewan, call the local Fish and Wildlife Office regarding permits.
- In Manitoba, a minimum of verbal permission or possibly a written permit from the local Conservation Office is required.

Since muskrats are classified as furbearers, it is illegal for landowners to sell the pelts of destroyed animals.

Landowners may sell pelts if they are registered trappers and the animal has been killed in a regulated season.

Contact the local wildlife office for instructions on the sale of muskrat pelts. If the intention is to sell the pelt, ensure permission is granted **before** killing the animal.

If a landowner hires a second party to destroy a problem animal, that person must be a registered trapper. The trapper must have written permission from the landowner in order to trap on private land.



Setting a Conibear trap can be extremely dangerous and it is best to seek help.

Photo credit: Slutker Furs

In all cases, the trap should be a Conibear No.120 or a livetrapp. The Conibear trap may be set on land or underwater.

Poisoning is not recommended. The risk of having bait taken by a non-target animal (e.g. a family pet) is high. Because of this, poisoning is not an acceptable control measure. If permission is in place to sell the pelt it is illegal in all provinces to kill furbearing animals with poison.

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Any livetrapp should be checked within 24 hours of being set.

THE BIG PICTURE

Destroying the muskrat is an option. However, if the dugout looked good to the animal to begin with, others will take the place of the one that was killed. The expense and annoyance of having muskrats inhabiting a dugout will only happen again. Making the dugout unappealing to muskrats will be the best bet in the long term.

Preventing muskrats from making a dugout their home in the first place will help maintain good quality water.

Muskrat control is only one step in improving dugout water quality. It is wise to manage all sources of contamination. If the water is used as a drinking source it is always important to disinfect.

For further information, see the **Water Quality Matters** publications: "Protecting Your Water", "Prairie Water Quality Problems" and "Agricultural Best Management Practices".

For further information on rural Prairie water quality issues:

- read the other publications in PFRA's **Water Quality Matters** series;
- visit the PFRA Web site at www.agr.ca/pfra;
- read Prairie Water News available from PFRA, or on the Internet at www.quantumlynx.com/water; or
- **contact your local Prairie Farm Rehabilitation Administration Office** (PFRA is a branch of Agriculture and Agri-Food Canada)