

# Dam Safety- Fact Sheet

Montana Watercourse and Montana Department of Natural Resources and Conservation  
Water Resources Division



## Animal and Rodent Control

Fact Sheet: 4

Rodents such as the northern pocket gopher, vole, prairie dogs, muskrat, and beaver are attracted to dams and reservoirs, and can be quite dangerous to the structural integrity and proper performance of the embankment and spillway. Rodent burrows weaken the embankment and can serve as pathways for seepage. Beavers may plug the spillway and raise the pool level. Rodent control is essential in preserving a well maintained dam.

In Montana the most likely aquatic mammals are beaver and muskrat. These rodents burrow into the upstream face of dam usually under the water line. Other burrowing mammals include: northern pocket gopher, badger, vole, black-tailed prairie dogs, and ground squirrels. These animals burrow into the downstream face of the dam for nesting and hunting.

### Muskrat

Muskrats are semi-aquatic rodents with brownish black fur. They range in size from 10-14 inches long with an 8-11 inch tail that is vertically flattened for swimming. They dig fairly large burrows and will continue to dig upwards as the phreatic surface (water level) rises. Their burrows are typically 6 to 18 inches below the water surface on the upstream face.



### Beaver

The Beaver is the largest rodent in Montana with body length of 25-30 inches and a weight of 45-60 pounds. They are easily distinguished by their large flat tails used for swimming. Beavers burrow into the bank of the upstream face just below the dam crest. A beaver den entrance can be 1-4 feet below the water surface. Often the outlet and intake structures are blocked by excess cutting. Beaver dams may be constructed across spillways.

### Badger

The North American Badger is easily distinguished by the white stripe down the middle of the head. A badger ranges in weight from 19 to 30 pounds. Badgers typically enlarge existing burrows looking for their prey: prairie dog, pocket gopher, ground squirrel. They are primarily nocturnal but can be seen during the day.

### Pocket Gopher

The Northern Pocket Gopher is a medium sized rodent with a body length of 5-14 inches. Fur color may be highly variable with ranges from black to almost white. Pocket gophers may have small burrow but can damage buried utilities and increase the likelihood of badgers.

### Vole

These small rodents can be a threat to dam safety if in large numbers due to their extensive network of tunnels and runways. They are active year round and create a hazard by attracting other burrowing predators such a coyotes, foxes, and badgers.

### Other Impacts

In addition to burrowing rodents and animals a dam embankment is at risk of erosion and vegetative cover loss from livestock and Canada geese. As livestock roam over an earthen dam they can remove stabilizing vegetation through grazing, trampling, and rooting. If livestock are drinking from the reservoir they can create ruts and paths that erode the bank and dam crest.

### Control

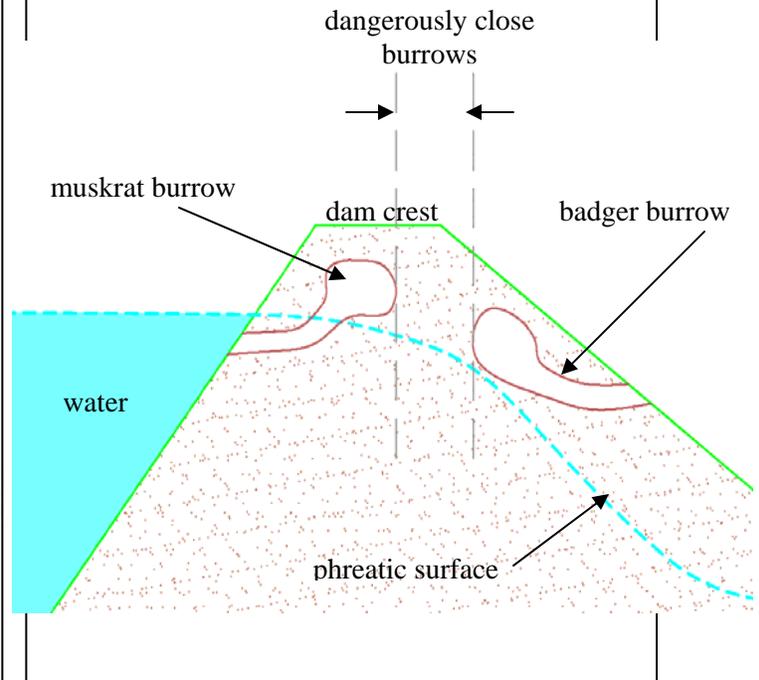
The most effective deterrent for burrowing animals is riprap or concrete facing with a filter layer. The armoring must extend above and under the water level for proper protection. As a rodent tries to burrow into the upstream face the filter sand and gravel will cave in, discouraging den making. Also maintaining proper vegetative cover along the bank eliminates habitat for rodents to forage and live in. Proper cover includes removing brush and trees and keeping grass mowed.

### Eliminating a Burrow

The recommended method of backfilling a burrow in an embankment is mud-packing. This simple, inexpensive method can be accomplished by placing one or two lengths of metal stove or vent pipe in a vertical position over the entrance of the den. Making sure that the pipe connection to the den does not leak, the mud-pack mixture is then poured into the pipe until the burrow and pipe are filled with the earth-water mixture. The pipe is removed and dry earth is tamped into the entrance. The mud-pack is made by adding water to a 90 percent earth and 10 percent cement mixture until a slurry or thin cement consistency is attained. All entrances should be plugged with well compacted earth and vegetation re-established. Dens should be eliminated without delay because damage from just one hole can lead to failure of a dam or levee.

Also, a fluctuating water level will deter aquatic burrows.

Before trapping or hunting any rodents or animals on your property, consult Montana Fish, Wildlife & Parks for current rules and regulations.



For more questions, comments, additional fact sheets, and area specific information you can contact DNRC or Montana Watercourse at the addresses below or on the web.

Montana Watercourse  
PO Box 170570  
Bozeman, MT 59717-0570  
406-994-6671  
[www.mtwatercourse.org](http://www.mtwatercourse.org)

Montana Department of  
Natural Resources and Conservation  
Water Resource Division  
Dam Safety Program  
1424 9th Avenue  
PO Box 201601  
Helena, MT 59620-1601  
406-444-6613

[www.dnrc.mt.gov/wrd/water\\_op/dam\\_safety](http://www.dnrc.mt.gov/wrd/water_op/dam_safety)