

BURROWING ANIMALS AND DAMS

Water impounded by a dam is a habitat ideally attractive to muskrats and beavers. Burrowing animals see the slopes of an earthen dam as an ideal location for their homes. These rodents can cause serious damage to a dam. Beavers will sometimes block a spillway or outlet structure with a 'beaver dam,' thus raising the water level and diminishing spillway capacity. Muskrats and other burrowing animals dig tunnels that could create pathways for water to seep or flow through the dam, which could lead to sudden failure. A dam owner must pay attention for signs of animal habitation or damage, and control or eliminate animal activity that could damage or interfere with proper operation of the dam's features.

Beavers

Beavers instinctively try to dam up flowing water; they will often block a dam's spillway and intake structure with logs and sticks. Such a beaver dam can raise the water level in a reservoir, reduce the spillway discharge capacity, or result in a sudden discharge of water should a beaver dam in a spillway suddenly fall apart. Beaver activity upstream of a dam can reduce or even stop the flow of water to a dam. A beaver dam upstream can produce lots of floating debris that can clog a dam's intake and outlet structures. Beaver activity downstream of a dam can raise the level of the tailwater, which in turn can reduce the discharge from the dam, or saturate and erode the downstream toe of the dam. Beavers have also been known to burrow into the upstream face of an earthen dam, below the waterline.



Beavers can block the control section of a spillway, thus reducing freeboard and spillway capacity.

The owner of a dam with beavers in the vicinity must inspect the dam's spillway and outlets frequently and clean out the accumulated debris or 'beaver dam' as soon as it appears. Frequent inspection and maintenance to remove debris dams may discourage beaver activity on and near the dam.



Groundhogs

Groundhogs, or woodchucks, like to burrow into hillsides, such as the downstream face of an earthen dam. A groundhog burrow is usually a network of tunnels and chambers, with multiple entrances. Groundhogs dig into dry soil and stay above the saturated zone (phreatic surface), which is the upper boundary of seepage or saturation in the earthen dam. Fresh dirt at burrow entrances is a telltale sign of an active groundhog burrow. Other indicators of groundhog habitation are worn paths connecting a burrow to nearby fields, and clawed or girdled trees and shrubs nearby.



Frequent mowing and clearing brush, saplings, and weeds that provide cover from predators will discourage groundhogs from trying to make their home in your earthen dam.

Muskrats

A muskrat will burrow into a dam's upstream face, starting six to 18 inches below the water surface and slant the tunnel upward into the embankment. The muskrat will hollow out a chamber above the water level, as far as 15 feet from the burrow entrance. If the water level then rises, the muskrat will dig higher into the embankment to excavate a new dry chamber.



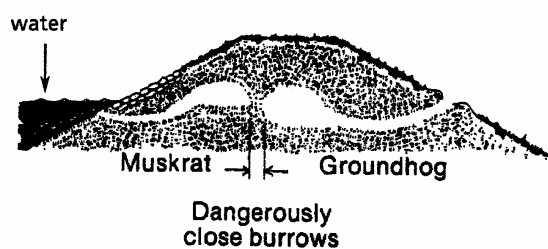
If a muskrat's tunnel from the upstream face gets close enough to a groundhog's burrow from the downstream slope and the water level rises, then water can easily seep through the remaining wall of earth and quickly erode a passage for direct piping of water through the dam. Such piping will erode the dam internally, which could lead to catastrophic failure when the embankment collapses at that spot.

The owner of an earthen dam can discourage habitation by muskrats by eliminating vegetation (cover and food) along the shoreline. And, a properly constructed riprap and sand/gravel filter, extending at least three feet below the water surface, will also discourage muskrats from burrowing into the dam.

Eliminating a Burrow

Backfilling an animal's burrow must be done to ensure safety and proper operation of a earthen dam. Animal dens should be eliminated immediately because damage from just one hole can lead to failure of the dam. Fortunately, repairing an animal burrow in a dam is easy and inexpensive.

The burrow should be excavated to eliminate all voids. Then backfill should be placed loosely in four- to six-inch lifts and well compacted with a hand or mechanical tamper. The surface of each compacted lift should be loosened to a depth of one to two inches before the next lift of material is placed. After all voids and entrances are backfilled, seed and mulch the repaired area to grow new grass and protect the slope from erosion.



Hunting, Trapping, and Wildlife Regulations

In Pennsylvania, shooting or trapping beaver, groundhog or muskrat is generally subject to restrictions and seasons, however dam safety does take priority. Before taking any action against these rodents, a dam owner should consult the local wildlife conservation officer or call the local office of the Pennsylvania Game Commission.

PA Game Commission Regional Offices

Region	City	Phone
Northwest	Franklin	814-432-3187
Southwest	Bolivar	724-238-9523
Northcentral	Jersey Shore	570-398-4744
Southcentral	Huntingdon	814-643-1831
Northeast	Dallas	570-675-2394
Southeast	Reading	610-926-3136

For more information on Dam Safety in PA, contact:

Department of Environmental Protection
Bureau of Waterways Engineering
Division of Dam Safety
P.O. Box 8554
Harrisburg, PA 17105-8554
717-787-8568

For more information, visit www.depweb.state.pa.us, keyword: Dam Safety.