

■ BEAVERS

Beavers are an important aspect to the general environment, however, there may be times that they pose a problem to the public by causing flooding problems. This prescription will identify the biology of the beaver, their benefits, and possible control techniques.

BIOLOGY AND BEHAVIOR: The beaver is one of the few mammals other than man which is capable of modifying habitat to suit its needs. Beaver often inhabit natural ponds, lakes or streams that supply sufficient water for their safety. But often beaver must provide their own impoundments for adequate water depth. Beaver are highly skilled in building dams of sticks, stones, mud, and other materials to maintain a constant water level. They exhibit an unusual degree of engineering skill in choosing dam locations. Usually, one dam is built to provide the water impoundment for the main lodge in a colony; one or several secondary dams may be built to provide safe travel routes and aid in transporting tree limbs and other vegetation. Beaver also commonly build or dig canals to aid in transporting vegetation to the home pond.

A beaver colony consists of a small group of animals occupying the same area or areas, such as a portion of a lake, a section of stream or a series of ponds on a drainage. They often live in dens or burrows in the stream or lake bank or in dome-shaped lodges built of sticks and mud. The colony maintains communal dams and uses the same food source. Typically, the colony is a family unit which includes the parents and their offspring of the previous and current years.

Family size and age class composition vary among colonies. Reported averages for family size range from three to eight. Fur trapping, predation, habitat quality and other influences on individual survival distort family composition. Beaver within a colony may occupy several bank dens or lodges. The male parent often takes up quarters away from the home lodge or den when the young are born. The yearlings begin extending their range to other dens and lodges, although they continue to use the home lodge until they disperse as 2 year olds.

Colony members seem to stay within their boundaries unless a lack of food or water, or habitat saturation, forces them to migrate elsewhere. The progeny are allowed to remain until about 2 years of age when they either begin to disperse or are driven out by the parents. Young adults leaving to establish new colonies may have to travel long distances to find suitable unoccupied sites.

Beaver are primarily nocturnal and do most of their feeding and dam construction at dusk and after dark. Seasonal movements of beaver vary greatly by sex and age classes. The female parent in the colony is relatively sedentary throughout the year. She is occupied with care of the young during the spring and summer. Little if any migratory movement by beaver occurs during late fall and winter.

The birth of new litters occurs in the spring. The 2 year old beaver disperse from the home colony at this time, too. These animals may spend the entire summer roaming about and not settle at any specific location before early fall. The location finally chosen for winter quarters may be adjacent to the parent colony or it may be on an entirely different stream drainage, depending on habitat conditions and competition for territory by other beaver. Dispersal distances vary considerably but average between 5 and 6 miles from the natal colony.

Beavers have few natural enemies because of their aquatic habitat and behavior. River otter, coyote, and mink occasionally prey on the kits. However, beaver rarely travel far from water and are relatively safe from most predators. In addition, adults are capable of putting up a strong defense when necessary.

Other than occasional outbreaks of bacterial diseases such as tularemia, the major cause of beaver mortality is the annual harvest for fur and damage control. Data indicate that beaver can maintain or increase their populations with an annual harvest of 30 to 40 percent. Therefore, it's not surprising that their population and range are expanding, since current fur prices offer little incentive for harvest and damage control efforts are limited.

Beavers benefit the environment in several ways. Beaver dams create ponds that contribute to the stabilization of water tables and help reduce rapid runoff from rain. Dams also help to reduce soil erosion, since much of the silt suspended in running water is deposited in the quiet pools impounded by beaver dams. These ponds create a habitat beneficial to many plants and animals and contribute to a diversity of plant communities. Many varieties of plants and animals are found in the beaver pond ecosystem.

In general, beaver are considered beneficial where they do not compete with people for the use of land, water, and trees; however, when fur values are low their populations increase and the damage they cause to roads, crops, pasture, and flooding of private land may become a problem.

The County's Roads and Transportation Services Department has had problems with county roads flooding due to culverts being plugged by beavers. There are currently beaver dams being built in the stream between Pattison and Long Lakes. These dams have the potential of causing flooding to properties located on Pattison Lake. They also create a temporary reduction in the flow of water into Long Lake.

CONTROL: Below are possible control techniques. It is recommended that the County staff work with the Washington State Department of Fish and Wildlife Agents in trying to solve problems related to beavers. Many of the control methods listed will require various permits.

1. **Exclusion:** Individual trees or shrubs can be protected by fencing or wrapping them with hardware cloth. Ornamental plots, culverts, drains and small ponds can be fenced to exclude beaver by using netwire with small mesh.

This approach may be feasible for homes, small parks, and golf courses in suburban areas, but it is rarely practical where beaver damage is extensive.

2. **Cultural methods:** It may be necessary to control water levels even where beaver and their ponds are desirable. This can be done by installing beaver dam drains, see figures 1 and 2 below. It may also be possible to alter the beaver habitat near surface water features to prevent beaver from moving in or to encourage them to move out. Clearing out trees and shrubs will eliminate food supplies and aquatic habitat and are probably the only cultural methods that have significant effects on beaver. However, permits such as the Department of Fish and Wildlife Hydraulics Permit (HPA) would be required.

It may be possible in marginal habitat, to persuade beaver to move out of an area by daily

destroying their dams and removing sticks, limbs, and other dam construction materials. However, this is often impossible or impractical and, if forced to move, beaver may be even more troublesome in the next location they choose. Also, if beaver are abundant they will continually invade suitable habitat. Again, permits such as HPA's would need to be acquired.

3. **Trapping:** It is not recommended to use trapping as a control technique unless no other methods work and if control isn't performed serious damage would result.

If trapping is required then a licensed trapper recommended by the Washington State Department of Fish and Wildlife would be contacted. Live trapping would be desirable if the Washington State Department of Fish and Wildlife has a release area that would benefit from the introduction of beaver. A release area should not have existing populations due to their territorial behavior and should have desirable habitat to ensure survival.

CONTROL STRATEGY:

1. Clearly define the problem. Beavers presence and their dams doesn't necessarily mean there is a problem. It is important to determine the possibility of what damages or problems may occur if no action is taken.
2. Determine who is a stakeholder in the solution and notify them.
 - The Washington Department of Fish and Wildlife is involved in obtaining Hydraulics Permits if dams are to be removed or bypassed. The WDFW not only are responsible for permits but is also a valuable resource in determining a long-term solution.
 - Identify any other permitting agencies such as Department of Ecology (eg. short term water quality modification permit), the U.S. Army Corps of Engineers (eg. Section 404 permit), and Thurston County Planning (Shoreline Permit) that would need to be contacted in case of any action taken.
 - Any stakeholder that will be directly impacted by the outcome of the solution should be contacted and provided an opportunity to review the solution.
3. If direct action is required review the techniques identified earlier and develop a plan that follows policy guidelines such as:
 - Least disruptive to the general environment.
 - Best preserves the natural system.
 - Most likely to produce a permanent solution.
 - Ability to carry out effectively.
 - Cost effective in short and long term.

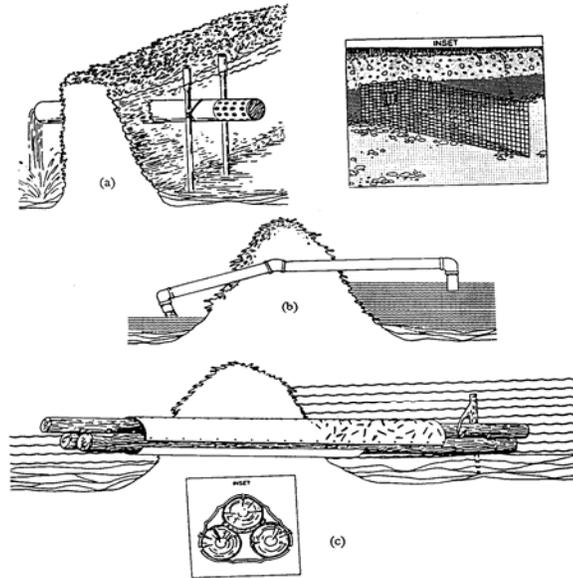


Figure 1
 Beaver dam drain options: (a) pipe drain, (b) siphon pipe drain, (c) three log drain.

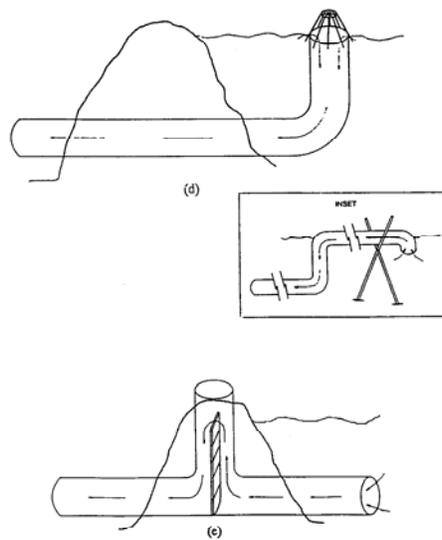


Figure 2
 Beaver dam drain options: (d) drop inlet drain, (e) "Whistle tube" drain.