A HOMEOWNERS ASSOCIATION'S GUIDE TO BEAVERS

Beavers are a common source of concern for HOAs in communities with freshwater features. This guide provides HOAs with a practical, research-based overview of how to understand beavers, assess the problems they cause, and manage conflicts nonlethally whenever possible.

Is it a beaver?

The most logical place to start is to confirm that beavers are present on the property. The most characteristic and identifying feature of a beaver is its uniquely paddle-shaped tail. You cannot always get a good look at the tail if the animal is swimming, and there are other brown, furry, aquatic animals that are often confused for beavers. The most common culprits are:

> Muskrat: Smaller than beavers with long, skinny, hairy tails, but they do often share habitat. When they swim at the surface, muskrats move their tails from side-to-side in the water. This is the easiest way to identify a muskrat vs. beaver in the water when size can be tricky to determine.
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> Groundhog: Smaller than beavers, often lighter in color, and with stubbier, furry tails. The biggest difference is habitat. If there is no water nearby, you have likely seen a groundhog. They are also more common.
>
> Nutria: Very obvious long, white whiskers and skinny tails like a muskrat. They are smaller than beavers and are found in limited areas.
>
> Otter: Longer, more slender bodies and more pointed heads than beavers. They also move differently through the water.

None of the above animals build to the extent that beavers do, so the presence of active dams and/or lodges are a clear confirmation of beaver presence. While otters or muskrats may share shelters similar to beaver dens, beavers do not ever want an entrance/hole exposed (entrances are located underwater). Additionally, beavers are often bigger than people think, sometimes weighing over 70 pounds.

Beaver Behavior and Ecology

The North American beaver (*Castor canadensis*) is a large, semi-aquatic rodent, native to most of the United States. They are herbivores who eat different plant parts of many different species of all vegetation types. Beavers live in family groups of a mated pair and their offspring from up to two generations. They are known for building dams, lodges, and canals. Beavers establish and maintain territories and protect their home range from unrelated individuals. They are keystone species and ecosystem engineers, meaning that their activities significantly shape the landscapes they inhabit and benefit other species in positive ways.

Beavers are well-known for their building behavior which can illicit human reactions spanning from frustration to envy and everything in between. Beavers build dams to impede the flow of water to create a pond for their own survival. They are strongly attracted to the sound and feel of running water, which signals a potential threat to their preferred pond conditions. Beavers require water of a certain minimum depth (approximately 3 feet) for a few main reasons:

1. To obscure entrances to lodges and dens and to dive underwater to escape land predators.
2. To ensure the pond doesn't completely freeze during the winter and to maintain an ample food cache.
3. To travel quickly and safely from place to place. Beavers prefer swimming to moving around on land, especially when hauling larger branches for food or building material.

Beavers build and maintain dams year-round- but not always! Dam building beavers rarely build only one dam, although it depends on the specific characteristics of the habitat. Multiple smaller dams in a complex may be built to slow down the flow of water to protect the integrity of the main dam, to flood and create canals for travel and foraging, and to access vegetation farther from the original banks. Sometimes they even intentionally open up their own dams to lower water levels. In short, beavers want to be able to control water depth for their own survival.

Seasonal behavior

An understanding of beaver life history and how their behaviors change throughout the year leads to a higher likelihood for successful coexistence. Familiarity with typical seasonal patterns in beaver activity helps HOAs anticipate and prevent conflicts. Here are some common behaviors beavers engage in during each season:

- Spring: Tree felling, dam maintenance, foraging, birthing of kits, dispersing two-year-olds (good time for flow device installations)
- Summer: Relatively less frequent tree felling, maintaining dam(s), foraging on a variety of plant types, kits emerging from the lodge (best time for flow device installations)
- Fall: More frequent tree felling, foraging, food caching, maintaining and insulating lodge(s), reinforcing dams to raise water level in preparation for winter (worst time to destroy dams)

- Winter: Tree felling, staying warm, mating, eating cached food, foraging as long as conditions allow, maintaining dam(s)

Why Beavers Matter

Beavers and the wetland habitats they create are beneficial to people, plants, animals, and entire landscapes and watersheds. Here are some of those benefits:

- Stream repair & restoration
- Erosion reduction
- Increased biodiversity
- Creation of habitat for wetland species, including some whose conservation status is under threat
- Beaver ponds recharge aquifers and stabilize the water table
- Beaver dams regulate stream flow which in turn mitigates flooding
- Beaver dams also improve water quality by filtering pollutants and sediment
- Beaver-created wetlands play a role in helping to mitigate certain effects of climate change, such as increasingly frequent severe weather events that result in major floods, droughts, and wildfires

Even beavers who live in human-made ponds or larger rivers:

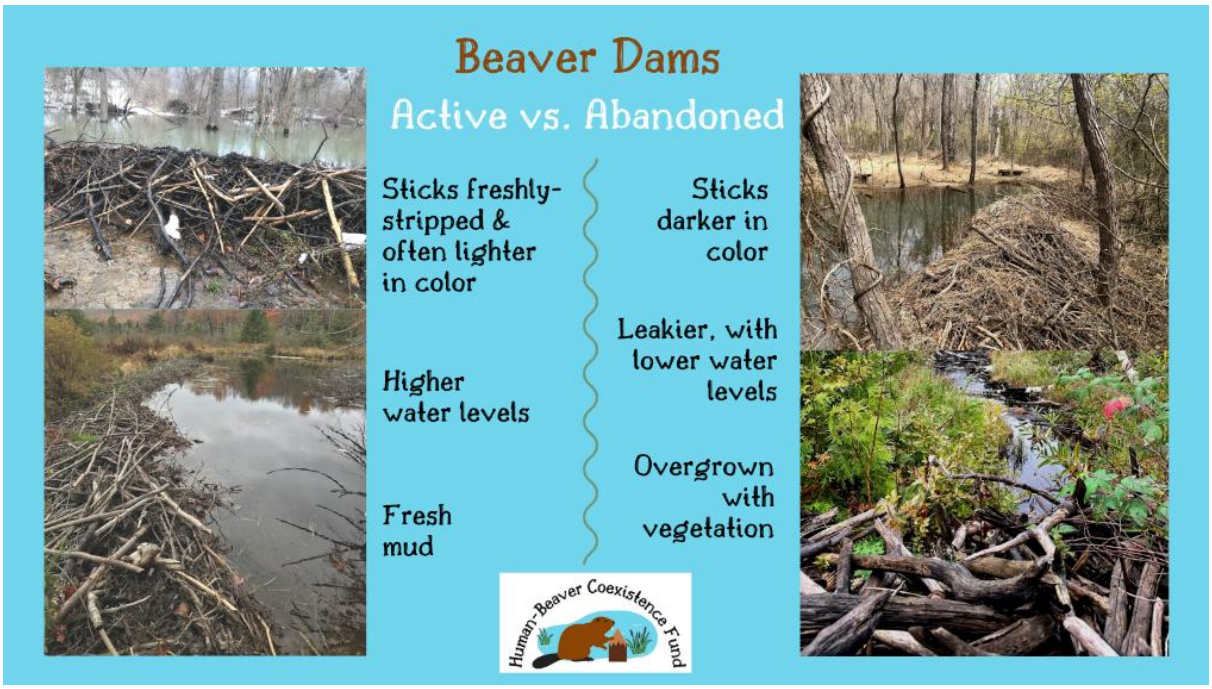
- Fell trees which create gaps in the canopy, encourage plant growth, and prevent forest ecosystems from stagnating in older growth stages
- Dig channels and canals making the area surrounding the riverbanks wetter and creating microhabitats for other aquatic critters
- Build bank dens, burrows, lodges, and food caches that still provide shelter for other animals, including sunning, hunting, hiding, and nesting spots for birds, reptiles, fish, and amphibians
- Provide food for predators such as bears, large raptors, coyotes, bobcats, and otters
- Contribute to local biodiversity
- Provide educational opportunities for human recreation, enjoyment, and wellbeing
- Have offspring who disperse and settle along connecting streams and provide all the additional benefits of beavers who dam

Do you have a beaver problem?

Sometimes people discover chewed or felled trees, realize there are beavers living in their community land, and assume there is a problem when there may not be. Confirming the presence of beavers doesn't necessarily confirm that there is a conflict. Beavers are adapted to make changes to their environment and nature is always changing.

Additionally, the changes beavers make to a landscape stick around long after the animals themselves have moved on. This can make it tricky for land managers to

determine if they have beavers active on the property or not. Use the following visual resources as a guide:



Indeed, beavers do sometimes cause problems for HOAs:

1) They chew and fell trees that have economic, aesthetic, or sentimental value to humans.

2) Their dams clog pipes, culverts, and other drainage structures creating flooding issues and resulting in property damage.

Humans often kill beavers when these behaviors cause problems. HOAs are forced to make tough decisions about beaver management that encompass issues like legality, short-versus-long term efficacy, affordability, and whether a method is perceived to be humane by a diverse group of residents with differing values of nature. This guide demonstrates how it is possible for communities to share space with beavers while addressing flooding and tree-chewing problems using long-term, cost-effective, and humane solutions.

Lethal Beaver Management

Lethal removal (trapping) is a short-term strategy that fails to provide a long-term solution because:

- The newly vacant habitat will eventually be inhabited by new beavers. The speed at which this occurs depends on the size of the local beaver population, the proximity of beaver activity in the surrounding area, habitat quality, and other factors. New beavers could show up within weeks, months, or more.
- It incurs a recurring cost because it needs to be repeated over time.

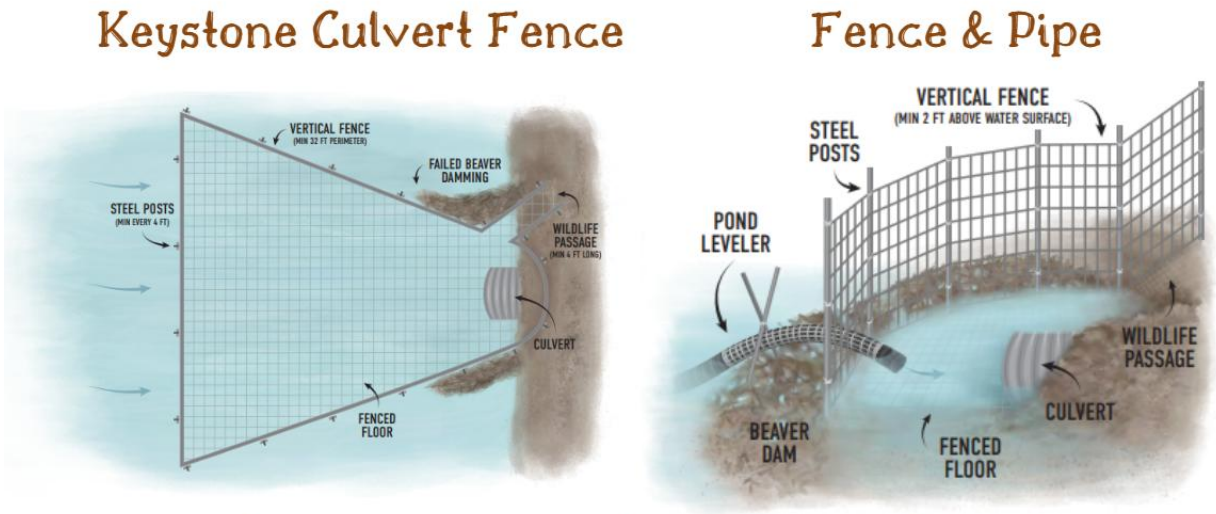
- It is often controversial, emotionally-charged, and perceived to be inhumane. Trappers are not always forthcoming about the methods of 'removal,' leaving HOA board members and residents hoping it's humane without doing the research. In some cases, HOAs proceed knowingly with lethal trapping and are not transparent about the details. When residents find out that lethal trapping is occurring, it can lead to larger issues involving petitions, unwanted media attention, and mistrust between community members and leaders. We have even heard of HOAs being sued by residents for failing to protect the community's wetlands after they chose lethal management over coexistence.

Nonlethal Beaver Management

Nonlethal management prioritizes coexistence by reducing property damage and allowing beavers to remain on the landscape. There are two main nonlethal strategies that we recommend in response to the two most common 'beaver problems.' They are proven to be effective in the long term, relatively affordable to implement, humane, and require minimal maintenance once in place.

1) How to address flooding issues

A flow device is built through a drainage structure or beaver dam to maintain an appropriate water level in the pond while allowing beavers to continue living at the site. They are also known as pond levelers or beaver deceivers. Considering the specific characteristics of a site is crucial for designing, building, and installing a flow device that will function effectively. We recommend consulting with certified and experienced practitioners to ensure the efficacy of a flow device. (See below for diagrams of a couple of standard designs and photographs of installed devices.)



(Illustrations from 'Best Management Practices for Pond Levelers and Culvert Protection Systems')

2) How to prevent tree damage

Materials
14 gauge welded wire fencing, 4ft tall with 2x4in spacing
wire/bolt cutters
work gloves
pliers
landscape stakes/staples/pins (6-10 inches long is ideal)
measuring tape (optional)
zip ties or hog rings & hog ring pliers (optional)

Important note: The specific kind of metal fencing we recommend is proven to be the most effective deterrent and the most cost-effective, longest-lasting solution. We recognize that HOAs often have regulations regarding metal fencing but urge you to consider an exception to the rule in this case. Other methods of protecting trees, such as painting tree trunks with a sand/latex paint mixture are less effective and must be reapplied more often as tree growth leads to cracks in the paint which beavers can chew through. Many of the land managers we work with observe that the cages are only conspicuous for the first few weeks. Vegetation grows around the bases, and weather quickly dulls the sheen of the metal, so that the fences quickly become 'invisible' to most. A little metal fencing is better than stumps where there were once trees!

Instructions

1. Acquire the recommended materials listed above. Depending on tree size, approximately 100ft of fencing can protect about 10 trees.
2. Prioritize which trees you want to protect first. This can be the trickiest part. Consider tree species, trunk size, and proximity to water. It is helpful to observe what beavers have already chewed (and where) in your area to learn about the local individuals' specific preferences. As a general starting point, favorites include alder, maple, willow, birch, poplar, cottonwood, and cherry. Conifers tend to be the least preferred. Beavers typically fell trees about the diameter of an adult human arm, but can take down much larger trees, often returning nightly to chew for days

or weeks. Trees within 40 meters (130 feet) of the water are most likely to be felled first, but beavers can travel farther for preferred species.

3. Cut each fencing panel long enough to leave one foot of space in between the trunk and the fence, all the way around the trunk's circumference. This allows the tree to grow and this method to work for years without requiring maintenance or threatening to girdle the tree.
4. Secure the seam by bending the cut ends of the fence around the opposite edge. You could also use hog rings or zip ties, if preferred, although we like to discourage leaving any plastic behind that will eventually rot off and litter the landscape.
5. Use a few landscape pins or staples to secure the base so beavers don't push/dig up and under the fence. Over time, vegetation grows around the base further securing the fence in place.
6. Get creative! Beavers also chew roots, so you can cut and flare out fencing to accommodate roots or use scrap pieces of fencing to cage in the roots by staking them down. When needed, cut and flare out fencing (or use scrap pieces) to accommodate low branches and hillsides.

Avoid these common tree-wrapping mistakes so you don't duplicate effort or waste money on the wrong materials:

Wrong material: Beavers can chew through chicken wire and other flimsy metal or plastic mesh. This is why we recommend heavy gauge welded wire (14 or thicker) with 2in x 4in spacing.

Not tall enough: Hillsides, debris, and snow can raise the height at which a beaver can chew on a tree trunk. For this reason, we recommend fences that are 3-4ft tall.

Too tight: When fencing is secured too close to the trunk, beavers can easily use their weight to press the material against the bark and chew the spaces in between the wire. Fencing that is too tight also risks the eventual girdling of the tree as it grows in diameter. We recommend leaving a gap of approximately 12 inches between the tree trunk and fencing material.

Too late: When a beaver has already chewed around the entire circumference of a tree, it will eventually die and is no longer worth fencing. It is important to fence high-priority trees before or immediately after the first signs of chewing are observed.

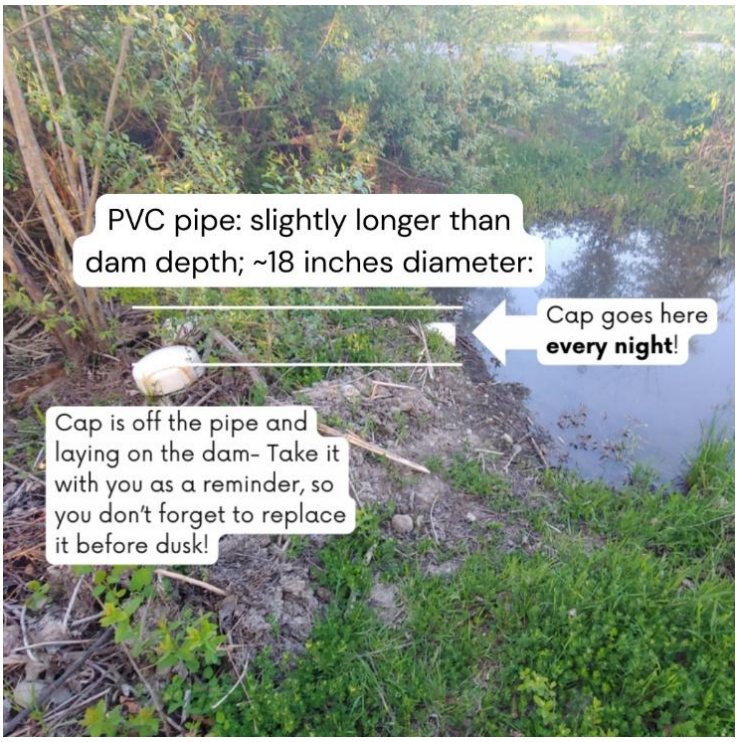
Not well-secured: Beavers can push up underneath cages and through seams that are not properly secured. We recommend using landscape pins/staples to stake fencing material to the ground.

Tree Fencing Examples

DOs	DON'Ts
	
	
	
	

3. Additional coexistence strategies

- Plant less-preferred tree species near shorelines.
- Plant more native, beaver-preferred species in areas where you want them to forage.
- Proactively fence saplings as a part of tree planting projects that are not intended for beavers.
- Keep areas near drainage structures clear of vegetation/overgrowth to dissuade beavers from frequenting the area.
- Avoid drainage structure designs that create or amplify the sound of running water or adapt existing structures to minimize the stimuli of flowing water.
- Live trapping and relocation is a nonlethal option that is permitted in only certain states. It is a time-consuming, complex, and expensive method that must be executed by qualified professionals. See resources at the end of this document for more information.
- Fencing larger stands of trees to prevent chewing is possible but more expensive. Experiment with fencing the three sides closest to the water and leaving the farthest side open to reduce cost.
- Electric fencing is also an option to exclude beavers from certain areas. See resources at the end of this document for specific instructions.
- Small-scale flow devices (like the one pictured below) can be a *temporary* solution for lowering the water level through a beaver dam daily while decisions about longer-term management are being made. Place a large-diameter PVS pipe through the dam at the desired water height and uncap it each morning to let the water drain. Replace the cap each evening so beavers do not clog it.



Common Beaver Misunderstandings

Myth: Lethal control is cheaper/easier/more effective than nonlethal management.

Fact: Lethal control is only a temporary solution and will need to be repeated year after year as new beavers disperse into the habitat left empty from beavers being trapped out. This incurs a recurring cost for HOAs. There are many case studies that demonstrate how coexisting with beavers saves money in the long-run, compared to recurring lethal trapping. It is more effective to adopt nonlethal coexistence strategies, like tree-wrapping and flow device installation, that address the problem long-term.

Myth: Removing a beaver dam solves a flooding problem.

Fact: Manual dam removal often leads to rapid rebuilding (sometimes overnight) and can worsen flooding. Sometimes, the repeated removal of smaller, secondary dams can effectively discourage beavers from building in a certain area, but it is typically the 'main dams' that cause the biggest problems.

Myth: Beavers eat fish.

Fact: Beavers are herbivores whose ponds and wetlands often improve fish habitat. Most people blame author C. S. Lewis for the common misunderstanding about beaver diet, as he wrote in *The Chronicles of Narnia* that they eat fish.

Myth: Beavers only eat trees/wood.

Fact: Their diet consists of many species (80+) of woody, herbaceous, and aquatic plants. They are known as 'choosy generalist' herbivores.

Myth: Beaver ponds are bad for fish and/or their dams block fish migration.

Fact: This is a tricky one, and the impact depends on the habitat, type of fish, etc. Ultimately, beavers and fish have coexisted for at least a million years. Current beaver populations are a fraction of what they were before the fur trade, and the fish survived then. In his book called *Eager*, author Ben Goldfarb writes about a bumper sticker that reads: *Beaver taught salmon to jump.*

Myth: There are too many beavers.

Fact: Beaver populations are constantly changing and are limited by habitat availability. Beaver populations are still rebounding from the fur trade. Because they are territorial,

you will never have more than one mated pair and its offspring in the same area as they protect their home range from other beavers.

Myth: Beavers 'multiply' like other rodents.

Fact: Beavers live in family groups that typically produce only 2-4 kits per year. The young stay with their parents for two years before dispersing to find their own habitat and begin reproducing on their own. Infant mortality is high and not all kits survive to reproductive age.

Myth: Beavers live in dams.

Fact: Beavers build two kinds of structures with different functions. Dams create ponds in which the beavers travel, forage, store food, gather mud, and seek protection from land predators. They live in structures called bank dens, bank lodges, or lodges (that can be at the water's edge, on an island, or constructed in the middle of the water).

Myth: Beavers quickly exploit all the trees in an area and then leave.

Fact: Perhaps if a habitat is not sufficient to support a beaver family long-term, this may appear to be the case. In fact, beaver foraging and damming activity actually serves to promote the growth of many of the native plant species they consume, such as willow and watershield. Beavers want to remain in a safe and resource-rich habitat for as long as possible for their own survival. They do not want to constantly move around the landscape in search of new resources as it is risky for them to do so.

Myth: All beavers build dams.

Fact: Beavers may not actually have to do all that building if it doesn't provide a benefit to their survival. For example, if a river is already deep and wide enough, it would be impractical and unnecessary to build a dam. There are also dispersing beavers who may just be passing through an area for whom a simple bank den or burrow suffices. Building consumes a lot of energy, so beavers only do so when they perceive a need.

Myth: There is something wrong if you see a beaver out in the middle of the day.

Fact: While beavers are mostly nocturnal/crepuscular (active at dawn and dusk), simply seeing a beaver out during the day is normal and not cause for concern.

Myth: Beaver presence will lead to more mosquitoes.

Fact: Healthy ecosystems with active beavers do not consist of completely still, standing water- it is always somehow flowing (downstream through leaks in the dam, into the ground, and outward on the landscape). Healthy beaver habitats also contain all the important predators of mosquitoes and their larvae such as bats, birds, dragonflies, and more.

Frequently Asked Questions (FAQs)

Q: How many beavers are on our property?

A: This is a notoriously difficult question to answer. The minimum number of individuals is the maximum number of individuals someone has observed at one time. Larger or multiple lodges can be indications of a family of multiple individuals. Camera traps can be a fun and engaging way for residents to observe and attempt to count beavers on the property. Dusk is the best time to sit quietly by a den or lodge to see how many beavers emerge.

Q: Will beavers destroy our wetlands?

A: While the arrival of beavers to a wetland will likely bring changes in water depth, species composition, and more, these changes are examples of a natural, dynamic, and healthy functioning ecosystem. There are rare cases in which beavers moving into a wetland might be an issue. For example, a species of conservation concern may require a different water depth than is ideal for beavers, or a wetland mitigation project may have success metrics that are at odds with beaver modifications to the site.

Q: Will beavers destroy and destabilize human-made dams/berms?

A: It is possible, but unlikely. Beavers are less likely than other species (such as groundhogs and muskrats) to burrow extensively into banks and cause erosion or destabilization. They prefer to build and live in lodges that rarely cause such damage.

Q: What if we are concerned about beaver- felled trees causing property damage, blocked sidewalks, etc.?

A: In most cases, beavers can control the direction of a falling tree and want to minimize their effort by ‘aiming’ a tree down the slope and toward the water (and, conveniently, away from houses). This means they can use gravity to their advantage. Beavers do not want trees falling on fences or houses any more than the human residents do as that is wasted time, effort, food, and building material. With this knowledge, HOAs can prioritize which trees to fence to prevent felling that may lead to property damage.

Q: What if our HOA has a rule against metal fencing or we simply dislike the look of the recommended materials?

A: This is a common concern. The materials we recommend for both tree protection and flow devices have been proven most effective after decades of research. They are, admittedly, not nice to look at but they do work. A metal fence around a tree looks the shiniest it will ever look on the day of installation. The sheen fades over time and residents look right past the fences, forgetting that they exist. A tree with a fence around it is better than a stump!

Q: How 'should' beavers react when encountering humans?

A: Healthy beavers are either a) scared of people and will dive underwater to avoid encounters entirely, or b) so used to people (habituated) that they simply ignore them.

Q: What if residents are afraid of beavers?

A: Beavers are largely shy and non-aggressive. Educational programs, signage, and clear communication can reduce fear and build community support.

Q: Do beavers cause giardia?

A: Giardia is often associated with beavers because of the term 'beaver fever.' In reality, beavers are no more likely than any other mammal (including humans) to spread the giardia parasite. While beavers may amplify infection, they are not often the original source. Other mammals like muskrats, livestock, bears, domestic dogs, and people are as much or more to blame. The parasites are even naturally occurring.

Q: Do beavers carry rabies?

A: Beavers, like most mammals, can carry rabies. If any abnormal or aggressive behavior is observed, people should keep a safe distance and contact animal control. Observing a beaver in the middle of the day is normal and not cause for concern if there are no other problematic behaviors observed.

Q: What if residents encounter beaver feces?

A: This is highly unlikely and presents a very low disease transmission risk as beavers typically defecate in the water.

Q: What if beavers are causing a problem that puts human health/safety at risk?

A: In true emergencies (imminent road/berm failure; flooded access roads; flooding in the winter that freeze on a roadway, etc.), one-time lethal measures may be necessary. Even in these cases, long-term nonlethal management should follow to prevent recurrence.

Q: How much do flow devices cost?

A: Materials for a typical flow device design typically cost between $1000-$3000. It can cost more to hire a contractor or company to handle permitting, installation, and even periodic maintenance checks. It is important to use trained and trusted professionals so that the flow devices work as intended for the full length of their lifespan of a decade or more. Flow devices are a long-term investment. Lethal trapping is a recurring cost.

Q: How much maintenance do flow devices require?

A: Most flow devices require minimal maintenance and last for many years as long as quality materials are used. Many flow devices function effectively for over a decade. We recommend that they are inspected quarterly (at the change of each season) and after major storms.

Q: Can HOAs install flow devices themselves?

A: Some smaller projects can be done successfully by a dedicated team of resident volunteers, but professional installation is recommended in larger watersheds and for more complex drainage systems to ensure effectiveness.

Q: Are permits required to install a flow device?

A: The answer to this question is state dependent. Check with the necessary local and state agencies, and the Army Corps of Engineers.

Best Practices for HOAs

- Reconsider policies that involve resorting to lethal control at the first sign of beaver presence.
- Unless there is an immediate and severe problem, consider a ‘wait and see’ approach. Many HOAs panic at the first sign of beaver activity and act out of fear or misinformation instead of making an informed decision. In many cases, beaver

activity in a given area is temporary as individuals move around the landscape searching for habitat. It is possible that some problems will be short-lived and resolve on their own. It is also possible that beavers will be welcomed and enjoyed by residents long-term without causing any problems.

- Ensure that human-made dams, berms, drainage structures, and low-lying roads are responsibly maintained so that beavers do not end up as 'scapegoats' for larger and more expensive issues.
- Consult with reputable wildlife coexistence practitioners or conservation organizations and follow their recommendations. Find a BeaverCorps trained professional near you: https://www.beaverinstitute.org/professional-info/find-a-professional-in-your-area/
- Communicate honestly and proactively with residents.
- Plan outreach opportunities for residents such as educational presentations on coexisting with beavers, tree protection workshops, informative signage where coexistence methods are installed, etc.
- Understand that human-wildlife coexistence is a process and that coexisting with beavers requires an attitude of 'adaptive management.' Treat beaver management as an ongoing stewardship responsibility, not a one-time problem.
- Budget for long-term nonlethal infrastructure.

About the Human-Beaver Coexistence Fund (HBCF)

Our mission is to educate the public about the benefits of coexisting with beavers and provide resources and financial support to address human-beaver conflict using nonlethal management strategies.

Coexisting with beavers provides many benefits for humans, native plants and wildlife, and the landscape. Therefore, we aspire to create healthy landscapes by transforming watersheds into biodiverse, self-replenishing, high-quality water-catchments with a focus on the coexistence of two keystone species, humans and beavers.

We demonstrate compassion for all living beings, and celebrate the inherent, ecological, and cultural value of living beavers. We acknowledge our human interconnectedness with nature, other species, and ecosystems on a local, regional, and global scale. We respect landowner and land manager decisions. Finally, we believe that a commitment to diversity, equity, and inclusion across race, gender, age, religion, identity, color, sexual orientation, national origin, disability, or any other identity, is what makes human-beaver coexistence possible.

HBCF currently offers remote coexistence consultations, a cost-share program, and virtual programs on the behavior, ecology, life history, and nonlethal management of beavers. Visit www.coexistwithbeavers.org for more information.

Need more resources? We partnered with Beaver Institute's National Education Working Group to create the Beaver Educator Resource Library (BERL) for those looking to engage audiences of all ages on beaver-related topics.

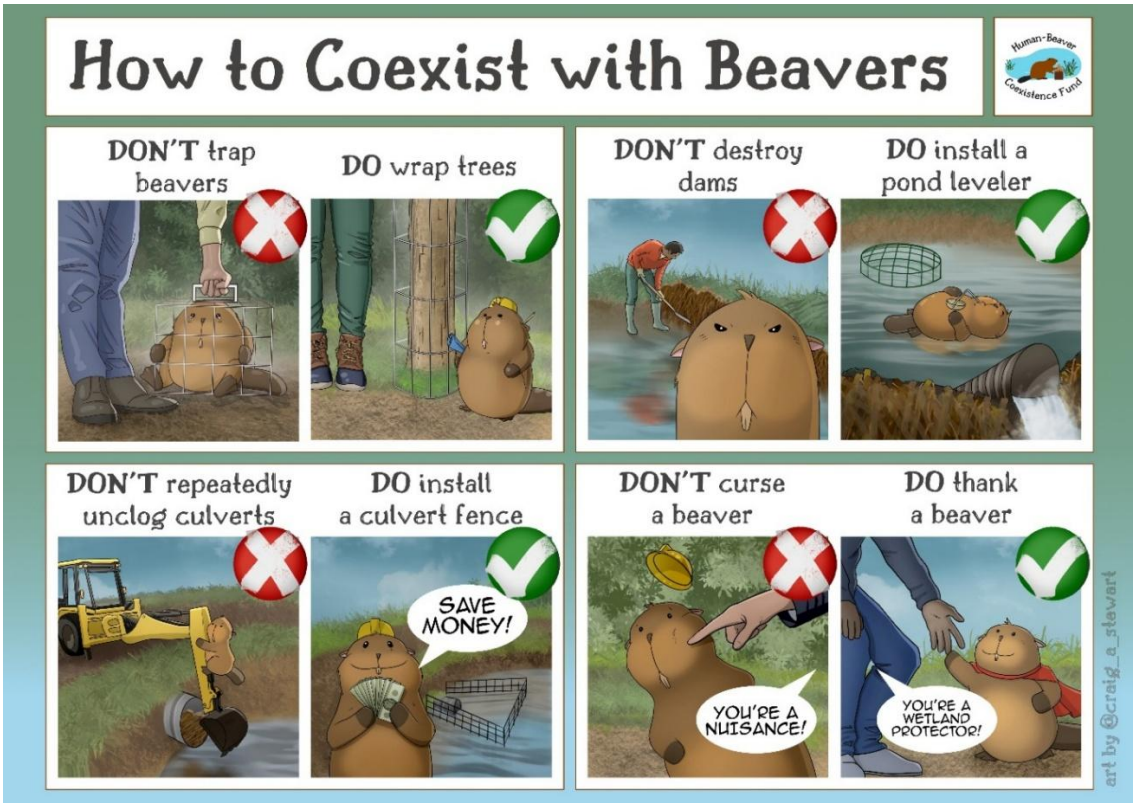
HBCF's Cost-Share Program

This program helps land managers pay for nonlethal management strategies to address common beaver issues such as flooding and tree-chewing. We partially fund materials for flow device installations and tree protection projects. Partial financial investment is required from the HOA. Exact funding amounts provided by HBCF will be determined on a case-by-case basis. Costs vary depending on the type of project, the nature of the landscape, and other factors, and may range from a couple hundred to a few thousand dollars.

How to apply: Email us at azak@coexistwithbeavers.org to express your interest in the program. An HBCF representative will contact you to schedule a phone consultation. Applications will be considered on a rolling basis, and funding will be offered as long as it is available.

Conclusion

Beaver 'problems' in your community are not a sign of failure- they are a sign that water is present and wildlife is thriving. With informed planning and proven nonlethal strategies, HOAs can protect property values, reduce maintenance costs, and demonstrate environmental leadership while coexisting with a native species that provides many benefits. Nonlethal management is not just a humane choice- it is practical, effective, and environmentally responsible. Thank you for your willingness to coexist with beavers!



References and Additional Resources

Human-Beaver Coexistence Fund (website): https://coexistwithbeavers.org/

Find a beaver professional near you: https://www.beaverinstitute.org/professional-info/find-a-professional-in-your-area/

Beaver Educator Resource Library (database): https://docs.google.com/spreadsheets/d/17AVURhGRhFIBp2XKc1DG6UzbAmOHwK005XVQPofzas8/edit?usp=sharing

Beaver Coexistence Forum (Facebook group): https://www.facebook.com/groups/339105817425

Best Management Practices for Pond Levelers and Culvert Protection Systems: A guide to for using flow devices to coexist with beavers: https://projectbeaver.org/resources/beaver-best-management-practices/best-management-practices-for-pond-levelers-and-culvert-protection-systems/

Best Management Practices for Tree and Crop Protection: A guide to for using fencing to coexist with beavers: https://projectbeaver.org/resources/beaver-best-management-practices/best-management-practices-for-tree-and-crop-protection/

Tree Protection (quick reference sheet): https://projectbeaver.org/resources/beaver-coexistence-101/beaver-tree-protection/

Culvert protection systems (quick reference sheet): https://projectbeaver.org/resources/beaver-coexistence-101/beaver-culvert-protection-systems/

Pond levelers (quick reference sheet): https://projectbeaver.org/resources/beaver-coexistence-101/beaver-pond-levelers/

Cost-benefit analysis of beaver coexistence tools (info sheet): https://www.beaverinstitute.org/wp-content/uploads/2023/03/Flow-Device-Cost-Analysis-Mistakis-Institute.pdf

Billerica Municipal Beaver Management Program (case study): https://www.beaverinstitute.org/wp-content/uploads/2023/03/Callahan-et-al-2019-Beaver-Report-Billerica-Municipal-Beaver-Management-Program-2000-2019-Analysis.pdf

Coexisting with Beavers: A Dam Worthy Challenge (video presentation): https://youtu.be/YTmZd9RtNGg?si=nUzJk3wTsSS2Syfp
Beavers and Flooding: A Stop Motion Story by Alison Zak

An HOA set lethal traps for Wally the beaver: Neighbors fought back (online article): https://www.washingtonpost.com/dc-md-va/2025/03/11/wally-the-beaver-fairfax-virginia/