

Beavers on Urban Landscapes

www.martinezbeavers.org

WORTH A DAM

January 2020 2020

RECESS IS OVER

For nearly 300 years we've enjoyed a beaverless landscape. The fur trade so demolished the many inhabitants of our rivers and streams that we suffer from a kind of collective environmental amnesia, totally forgetting where they belong. There are more beavers now than our parents or grandfathers endured. But this languid "Beaver recess" is over. It's time to face the fact that the beaver population is returning and our sprawling cities have expanded into nearly every corner of their old territory.

Beavers are coming back to the waters they once knew. It matters little to them that we have since 'developed' those lands with expensive roadways, culverts and infrastructure. Beavers prefer low-gradient streams, and so do cities. Beavers like neglected wildlife corridors, which our urban streams often are. And beavers especially enjoy the fact that cities tend to plant trees along their waterways - we do it for bank stabilization, but they think it's *delicious*.

What this recovery means is that trapping is no longer a one-time fix. When a beaver family is removed a new one is usually waiting in the wings to fill the vacancy. In 2015 some 38 states reported damage from beavers in urban settings and the numbers are rising. Today, if beavers haven't showed up in your city yet, they most likely will soon.



In the past, beaver conflicts have traditionally resulted in a single solution: trapping. This has the negative by-product of reducing wildlife habitat in the greenbelt, affecting already compromised birds, frogs and fish. Moreover, recovering beaver populations make trapping or relocation a temporary solution at best. Recently, some surprising cities have started using additional tools, with long-lasting dramatic results.

This pamphlet will help you learn about them.

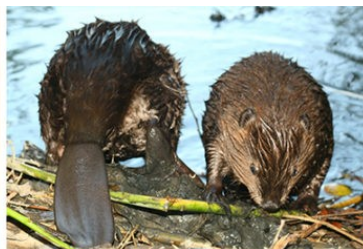


Beavers on urban landscapes

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"Efforts to protect biodiversity are now focusing less on preserving pristine areas and more on finding room for wildlife on the margins of human development. As urban areas keep expanding, it is increasingly the only way to allow species to survive."

Richard Coniff Yale 360



CAN CITIES AND BEAVERS REALLY COEXIST?

In 2007, Martinez, California, had some unusual visitors. In those days you could drop by the local Starbucks, pick up your morning latte, and step right outside to watch some fluffy beaver kits munch down willow leaves, twigs, and scraps before they ducked off to sleep in the nearby lodge for the day. If you listened closely enough you could even hear them.

The city of Martinez is in northern California about 45 miles northeast of San Francisco. Its disjointed historic past means that it is both the last home of naturalist John Muir and the site of the original refinery for Shell Oil. When the beavers showed up in Alhambra Creek, the same split personality greeted their arrival, with business leaders of the town adamant that the dam would cause flooding, and passionate neighbors insisting that they be allowed to live.

It wasn't uncommon in those days to see families gathered at the bridge in the evenings, watching the beavers and enjoying their antics. You were as likely to run into your neighbor on the bridge as you were to meet your butcher or your third grade teacher. Everyone had a story about them, and some of them were even true. (I once heard a grey-haired watcher explain-



ing to her grandchildren that "No, no, that isn't a rat they saw in the creek. It was a beaver. Their tails just don't get flat until they grow up!") Everyone felt a kind of responsibility for the newcomers, and when one city worker climbed down to take branches off the dam, a homeless man laid across it, using his body as a blockade, and stayed there until he was arrested.

The restrictions of California law meant that the beavers couldn't be relocated; they could only be killed, and that didn't sit right with the residents. These were our beavers. Children launched petitions at the local deli and homeowners held a candlelit vigil at the dam site. No one could remember seeing beavers in the creek. Nothing like this had happened in Martinez



before. News cameras started showing up, and people were eager to talk. Never mind that they weren't experts or that they hadn't been on television before. No matter how many shopkeepers worried about flooding, there were always five more advocates on camera to stand up for the beavers.



Eventually public opinion was so strong that a city meeting was held to discuss what could be done. By that time, the story had grown to truly remarkable proportions. The beavers were in all the local papers, the state papers, and even on national news! On November 7, 2007, two hundred people showed up for the city meeting. They came from uptown, downtown, and out-of-town to voice their concerns for the beavers.

I sometimes describe that glorious meeting as a cross between the last five minutes of *It's a Wonderful Life* combined with the best parts of *Mr. Smith Goes to Washington*. It was that good. Even though the city did its best to stack the courts with negative hydrology reports and alarmed businessmen, they had to admit they were woefully outnumbered. By the end of the meeting, city officials had a kind of deer-in-the-headlights look about them, and they reluctantly agreed to form a "subcommittee" to study the issue further.

The first thing the subcommittee did was vote to hire Skip Lisle of Vermont to come out and install a flow device at the dam. "The purpose of a flow device," he told us, "was to stop the vertical growth of the dam and keep the water flowing in the creek." But even after the flow device seemed to be working and the subcommittee issued its recommendations, the city still declined to vote on the future of the beavers.



Concerned, I gathered together supporters and formed a group to advocate for the beavers, calling it "Worth A Dam." We worked to hold a "Beaver Festival" that summer, because it occurred to me that whatever might be lurking behind



the scenes, it would be a lot harder to kill the beavers after we decided to throw a party for them. That first festival was a tiny affair, with about 15 exhibits and barely 300 attendees. We gave beaver tours, answered questions, helped children make tails and enlisted supporters to speak on camera for a "video letter to the mayor." Channel 4 showed up, and we did our best to be visible and keep the pressure on.

Despite everyone's fears, Skip's flow device worked for a decade and our beaver population never "exploded." Every one of the twenty-seven beaver kits born in town went off to seek his or her own fortune before their second birthday. "Worth A Dam" wire-wrapped trees and, using willow cuttings, worked every year with the regional water board to replant downed trees.

The town got used to the beavers, and the beavers got used to the town. Their safely maintained dams (at one time there were as many as five) made new wetland habitat in our urban creek, bringing muskrats, otter, steelhead, wood ducks, and even mink to a neglected stream that was lined with parking meters.

In the end, Martinez learned a very simple lesson: when we helped the beavers, they helped us.

Heidi Perryman, Ph.D...

This article was originally Published on Center for Humans and Wildlife



Photos by Cheryl Reynolds, Ron Bruno & Rusty Cohn





BEAVER MAGNETS

Skip Lisle, M.S., President, Beaver Deceivers LLC



Beavers are constantly exploring the landscape looking for good habitats. As territorial animals they're also looking for unoccupied ones.

Long beaver dams require an enormous amount of effort to build and maintain. By contrast, narrow "outlets" are easy to dam, and thus represent high-quality habitats.

Roads are large manmade dams with tiny holes in them called culverts. There has never been a more ideal damming site. When placed in beaver damming habitat low-gradient areas on small streams $\frac{3}{4}$ culverts will always be clogged by the first explorer to come along. When beavers are killed to prevent this, a high-quality habitat becomes vacant. In other words, a giant beaver magnet is created.

Killing beavers to solve the problem guarantees the opposite result. It assures a never-ending cycle of culvert cleaning (usually with heavy equipment) and road repair. It is the height of inefficien-

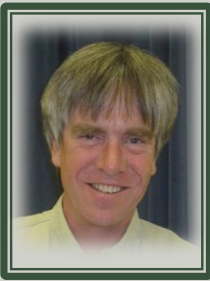
cy, costing taxpayers millions of dollars a year.

In addition, it's terrible environmental stewardship. It requires the permanent extirpation of this native, key-stone species from the general vicinity of every culvert. Any non-threatening wetlands that have been created nearby will then drain, and the potential for any new wetlands to develop will be eliminated.

By contrast, high-quality flow devices like Beaver Deceivers™ can eliminate the conflict and make the presence of beavers irrelevant. This efficient, long-term approach presents a remarkable opportunity that can save vast amounts of human wealth while producing a similar volume of natural wealth.



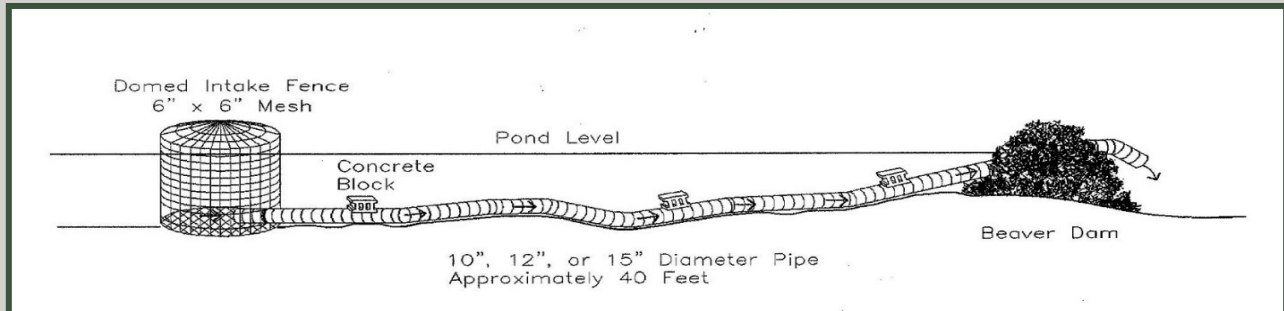
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THE POND LEVELER

Michael Callahan

Beaver Institute Inc. Beaver Solutions LLC



A well-designed Pond Leveler pipe system can be a very effective solution. The first effective Pond Leveler was invented in the 1980's at Clemson University. Pond Leveler design has improved considerably since then. There are thousands of effective Pond Leveler pipes installed across North America. Professional installers can guarantee their effectiveness.

A Pond Leveler creates a permanent leak through the beaver dam that the beavers cannot stop. They are designed so beavers cannot detect the flow of water into the pipe. They typically do this by surrounding the submerged intake of the pipe with a large cylinder of fencing which is placed in as deep water as possible. This prevents beavers from feeling or hearing water flowing into the pipe so they do not try to clog the pipe, and a safe water level can be maintained. This eliminates the need for beaver removal.

The height of the pipe in the dam determines the pond level (see diagram). Water will flow through the pipe unless the pond level drops below the peak of the pipe. The pipe is set in the dam at the desired pond level.

Heavy storm runoff can simply flow over the top of the dam. Following the storm the pipe will return the pond to the normal level.



© SUZI ESZTERHAS

When installing a pipe system it is very important to lower a pond only enough to protect human interests. The more a pond is lowered the more likely it is beavers will build a new dam to render the

pipe ineffective. Lowering a beaver pond by up to one vertical foot is generally not a problem.

With routine maintenance a Pond Leveler pipe system should remain effective for many years allowing preservation of the beavers and the valuable wetland ecosystems they create with their dams.

WORTH A DAM



Beaver Tours



EDUCA





ATION



MACKINAC ISLAND, MI

About 7 years ago, an amazing thing happened on Mackinac Island: a beaver pair built a lodge near the shoreline on the edge of town. The local community was excited and I was ecstatic at the chance to photograph them close-up! They soon got used to my presence and went about their business uninterrupted.

It was an incredible learning experience for so many! Tourists were able to see them in their natural habitat and they soon became a "point of interest" on the Island, competing with many natural wonders. Their lodge was just a few feet from the shoreline on a path that 100's of people took daily on their bike ride around the Island.

It was clear that beaver parents are wonderful at caring for their young and that they are second only to man as architects. Their lodge was destroyed by storms 3 times and the locals brought branches for them to rebuild; And they did- in just 2 or 3 days!



Port Moody, B.C.

A beaver couple moved into our neighbourhood stream in November, 2016, and began changing, not only the stream, but the hearts and minds of an entire community. At first, there were the expected comments from the nay-sayers who thought they should be removed, but we slowly began our own educational comments on our shared Facebook page and people's attitudes started to shift towards acceptance and, even more gradually, appreciation.

The beavers held their own daily interpretative programs by simply being

themselves. Everyone began to relate to these rather boring, monogamous workaholics whose kids chattered constantly - similarities that we shared with these aquatic mammals. The beaver couple's two kits were a draw for everyone to see and the community held a naming contest with the winning selections being Mr and Ms Brewster with their kits, Woody and Chip.

Each evening the two pedestrian bridges that crossed the stream were filled with parents, grandparents and children who gathered to quietly watch this beaver family glide back and forth. We not only got to meet, and know, the beavers; **we got to know each other.** The beavers have now moved into an adjacent stream and people still watch them but we all miss the family in our midst and the summer evenings we spent on the bridges.

Jim Atkinson
Judy Atkinson-Taylor
Port Moody, B.C.

To this day, I get notes from people thanking me for telling their story. I am hopeful that attitudes will change towards this amazing animal and people will see them for the eco-engineers that they are and welcome their presence.

Nancy May
Mackinack Island



TREE PROTECTION



FENCING

Trees can be protected by wrapping the trunk with wire!

The fence cylinders are best made from 2" x 4" mesh.

Chicken wire often rusts out in a year or two, (and beavers are way bigger than chickens!) Aim for a four foot high fence so the beavers cannot get above it. (Or at least 2 feet above the highest snow level). The initial gleam of the galvanized fence quickly fades to a nice dull gray patina which is barely noticeable on most trees.

Make sure you leave room for the tree to grow!



Fernie Academy Students B.C.



Kamloops Naturalist Club B.C.



Beaver Backers: Fargo, ND



White Rock residents Dallas, Tx



ABRAISIVE PAINTING

Sand Painting can be an effective, cheap and attractive solution to tree protection.

Choose latex exterior paint that matches the color of the park and mason sand. Mix 5 oz sand per quart of paint OR mix 20 oz sand per gallon of paint, or 140 gm sand per liter of paint.

Make in small batches at a time on the day you are going to apply it. Apply paint to bottom three to four feet of tree trunk (2 feet above snow). Some users recommend just patting on the sand onto wet paint to apply. Repeat every couple of years.

FIELDS & CROPS

Larger spaces like crops and vineyards can be protected with electric wire. Lay poultry grade wire at a height of six inches around the perimeter and power with a solar panel for maximum efficiency.

WORTH A DAM

PROTECTING VINEYARDS

Livestock electric fencing (poultry grade) on solar panel installed at 6 inch height

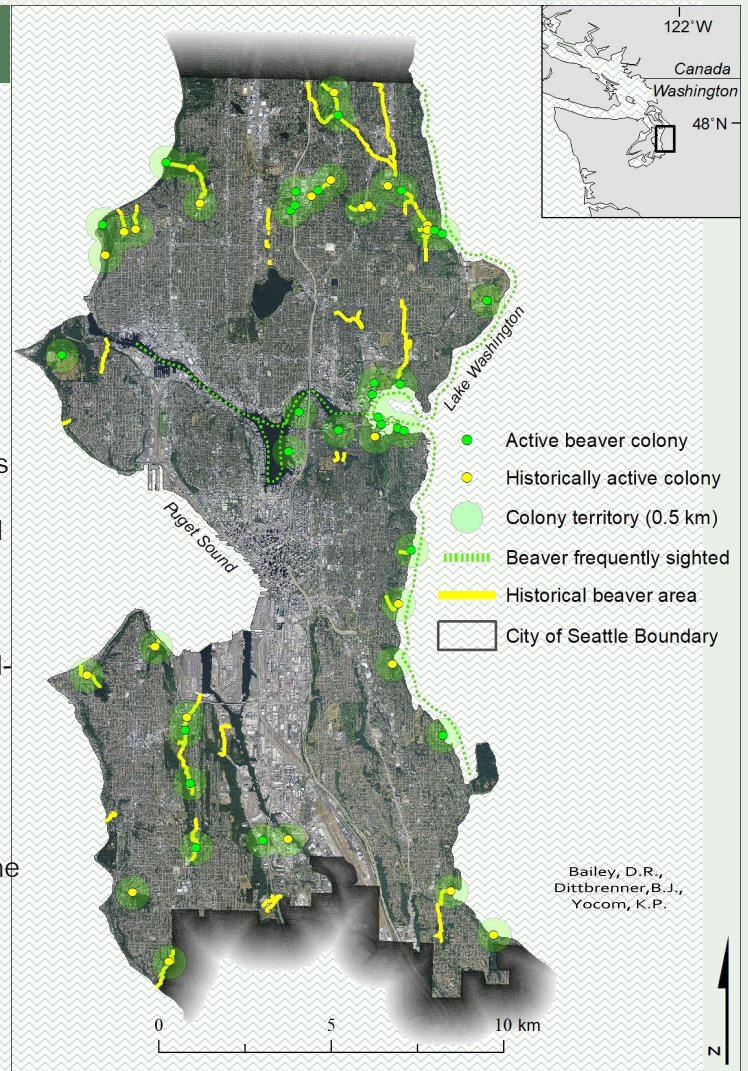
DESIGNING WITH BEAVERS IN MIND

Benjamin J. Dittbrenner PhD,
Executive Director, Beavers Northwest
Riparian landscape ecology Research Fellow,
Northwest Climate Adaptation Science Center

Beaver populations in many parts of Washington State have been rebounding steadily over the past few decades. As their numbers have expanded, beavers have increasingly colonized urban areas, including waterways within the City of Seattle. In 2017, researchers evaluated the extent of beaver occupancy in waterbodies within Seattle city limits and found that some level of recent colonization has occurred in nearly all permanent water bodies.

Seattle parks, greenways, and shorelines tend to be the places in which beavers have established strongholds from which they colonize new urban areas. The dams and ponds that they create often transform the landscape, increasing biodiversity of aquatic and riparian species. In these natural spaces, presence of beavers have created opportunities for wildlife viewing. With the increase in water from damming, however, also comes increased prevalence of flooding and infrastructure conflicts.

Despite these issues, beaver's roll in increasing biodiversity and ecosystem services has been welcomed by many Seattle City departments and residents. Seattle Parks managers have taken a non-lethal approach where possible, managing flooding by limiting dam heights instead of using lethal trapping.



Presently, active beaver colonies and expanding wetland complexes exist in most of Seattle's large parks and many enjoy the opportunity to view beaver families transporting logs and working on their dams and lodges. In some cases, non-lethal management of increasing populations requires additional maintenance and monitoring actions. Despite these requirements, Seattle's management strategy has garnered attention and other municipalities are looking towards this model as they also see beavers moving into their urban green spaces.

Increasingly, nonlethal management is proving an effective and financially prudent means to address both the structural and ecological assets in areas where conflicts exist.” [We reported] a range of cumulative net benefits of \$1,891,327–5,954,912 over 7 years.

Hood, G.A., Manaloor, V., Dzioba, B., 2018. Mitigating infrastructure loss from beaver flooding: A cost – benefit analysis. *Human Dimensions of Wildlife*. 23, 146–159.

“Urban infrastructure efficiently routes runoff over hot impervious surfaces and through storm drains directly into streams and can lead to rapid, dramatic increases in temperature. Thermal regimes affect habitat quality and biogeochemical processes, and changes can be lethal if temperatures exceed upper tolerance limits of aquatic fauna.” ***Thus the introduction of beaver into urban streams may help moderate the negative urban heat island effects.***

Pollock, M.M., G.M. Lewallen, K. Woodruff, C.E. Jordan and J.M. Castro (Editors) 2017. *The Beaver Restoration Guidebook*:

“[*Groundwater recharge through infiltration with beaver dams*] can be particularly beneficial in urban areas where the capacity for infiltration is severely diminished due to the extensive use of impervious surfaces such as roadways, buildings, and the compaction of soils.”

Bailey, D.R., Dittbrenner, B.J., Yocom, K.P., 2018. Reintegrating the North American beaver (*Castor canadensis*) in the urban landscape. *Wiley Interdiscip. Rev. Water*

“Increases in well-being due to contact with nature may be in part because individuals who can contact local nature perceive more ***cohesive communities***. ... Social cohesion [is] an important mechanism through which nature links to personal well-being (e.g., happiness, work performance) and socially responsible behaviors (e.g., environmental concern), and they **linked the quantity of nature to community-level crime incidence.**”

Weinstein, N., Balmford, DeHaan C., Gladwell, V., Bradbury, R. Amano T. Seeing Community for the Trees: The Links among Contact with Natural Environments, Community Cohesion, and Crime, *BioScience*, Volume 65, Issue 12, 01 December 2015



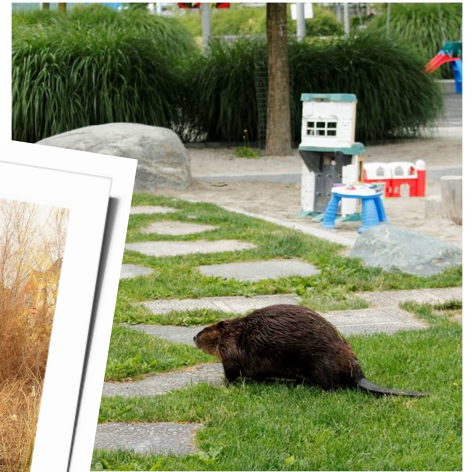
**READY OR NOT
HERE WE COME!**



Louisville, Kentucky
Ian Boone



FORT WORTH, TEXAS
CHRIS JACKSON



ier Park, Vancouver
John Allison



Briar Chapel, NC
Paul Stewart



PHILADELPHIA, PA
CHRISTOPHER MULLER



LINCOLN PARK CHICAGO
RANDALL HALL



Napa, California
Robin Ellison



Vancouver
John Allison



Mackinac Island, MI
Nancy May

