

## **Mother Nature's Water Engineers**

By the Hebron Conservation Commission – November 2024

Central New Hampshire's Lakes Region is rich with incredible, high quality water resources: lakes, ponds, rivers, streams, waterfalls, wetlands. When you fly over in a small plane, the ground is constantly shimmering with a vast amount of surface water, and full aquifers beneath. Besides our many communities and lake associations working tirelessly to protect our water quality, there is another critter who is helping in very important ways.

### **“Eager as a Beaver” ~ “Busy as a Beaver”**

If you've ever met a beaver, these sayings are SO true! While nearly trapped out of existence from an estimated 200-400 million<sup>1</sup> in North America hundreds of years ago, beavers have rebounded in the past several decades. Beavers are re-occupying streams and creating ponds that are a huge benefit to wildlife, but in some instances may threaten to flood infrastructure where we've invaded THEIR historic territories. Over the past centuries, settlers cleared forests, drained wetlands, built roads and established settlements in valleys that had lost their Keystone mammal. According to National Geographic “a keystone species helps define an entire ecosystem. Without its keystone species, the ecosystem would be dramatically different or cease to exist altogether.” These activities have degraded how our watersheds function, water tables have fallen, and the extensive wetland habitats have disappeared.

Beavers can move into a stream drainage area suddenly (it seems), and build a practically impenetrable dam of sticks, mud and rocks in a matter of days. They build the dam to impound enough water to protect themselves from predators, so they can swim to their underwater lodge entrances safely. The Hebron Conservation Commission (HCC) has been watching this first-hand for several years beside a trail in the Hebron Town Forest. First it was a low dam across a perennial stream and large wetland, and continuously grew to increase the depth and size of the wetland. During a huge rain event, the dam washed out and took the trail and wooden bridge with it. But the beaver was back immediately and repairing his dam. The HCC had to repair the trail and the bridge! However, our philosophy is to co-exist with the beavers because they are so important to maintaining healthy ecosystems.

### **There are many ways beavers help create valuable habitats and help us manage water resources.**

Beavers are known as a keystone species because in creating ponds and reestablishing wetlands, they build important habitat for myriad other species including mammals, fish, birds, amphibians and insects. Formerly, wetlands were complexes including floodplain forests, marshes, peatlands and swamps – all different forms of saturated habitats and natural communities for plants and animals.

The influence of beavers creates plant biodiversity as well. In many ways these wetlands expand the riparian areas - the uplands beside the wetland - and provides food and safe cover for many other mammals, birds, insect life and amphibians.

Beavers improve water quality, contrary to what many may think. Beaver dams act as a natural filtration system, blocking sediments and nutrients from continuing downstream. The dam and ponds absorb pollutants such as heavy metals, pesticides, fertilizers and phosphorus naturally occurring in the soil.

Beaver ponds are especially important in times of drought. The huge volumes of stored water they create are more readily absorbed into the soil, and recharge deep underlying aquifers. These water impoundments serve to maintain downstream water flow and make ecosystems less vulnerable during dry spells.

Beaver ponds also help store water in times of floods, slowing the flow of water and thereby delaying and reducing flood peaks further downstream. This is especially apparent where there are watersheds with steep hillsides, where runoff is “flashy” and happens very fast.

### **Restoring watersheds by “re-wilding” beavers, or building Beaver Dam Analogs**

Almost half of all the wetlands in the Continental US have been lost since the 1780’s according to a 2024 report from the U.S. Fish and Wildlife Service<sup>2</sup>. While beavers were reintroduced by a program in NY in the early 20<sup>th</sup> century, our watersheds still have suffered from three centuries of degradation: many forests were cut down, streams were straightened to create agricultural fields, and subsequent erosion has carved deep rocky stream beds. In the past two centuries, roads, infrastructure and development have spread dramatically across watersheds and filled in millions of acres of wetlands.

While considered pests in the past, scientists now recognize beaver’s crucial role in preserving biodiversity. Along with allowing beavers to naturally re-populate streams, watershed managers are implementing a relatively new strategy to rejuvenate landscapes, restore natural water storage systems, and recreate thriving ecosystems. Yup, they “mimic” beavers by building something like a beaver dam, a Beaver Dam Analog, to attract beavers into a degraded area<sup>3</sup>.

The HCC tried this dam management technique in our town forest location. As our beaver family continued to build their dam higher and higher, they also extended it completely across the trail (which is Hebron’s only emergency access into the depths of the town forest trail system). With the help and advice of Skip Lisle, inventor of The Beaver Deceiver<sup>4</sup>, member Paul Connor built a wire mesh – log – boulder – “wall” at the wetland edge and on the high side of the trail. Lo and behold the beavers have used this man-made dam (wall) to continue with their woven mud and stick structure! We’ll see how this continues to evolve into the future!

Hebron was introduced to the Beaver Deceiver dam management system several years ago, as an ingenious way to manage flooding from a beaver dam that was affecting a former town roadway. This involves installing a pipe at the bottom of the beaver dam to allow continuous waterflow underneath the brook below. If the beaver doesn’t hear running water, he will stop building his dam higher. Here we also taught the beaver to construct his dam along the high side of the road. These systems allow the beavers to live, while the human community can enjoy the richness of the extensive wetland habitats they have created.

Beaver trapping is still allowed in the state (NH RSA 210:9), and can be used where dams become a serious threat to homes and infrastructure. Prior to any action, however, landowners should contact the New Hampshire Fish and Game Department for information and requirements relating to the action.

But we encourage you to get to know your local beaver family, and enjoy watching these amazing mammals do their work to make new habitats just flourish.

***Footnotes:***

<sup>1</sup> Ben Goldfarb, *Eager: The Surprising Secret Life of Beavers and Why They Matter*

<sup>2</sup> Fish and Wildlife Report: [www.fws.gov/project/2019-wetlands-status-and-trends](http://www.fws.gov/project/2019-wetlands-status-and-trends)

<sup>3</sup> Allaire Diamond, *Building Beaver Dam Analogs to Restore Watersheds*, Northern Woodlands Magazine, Autumn 2023

<sup>4</sup> Skip Lisle, [beaverdeceivers.com](http://beaverdeceivers.com)

***Resource:***

Leila Philip, *Beaverland, How One Weird Rodent Made America*

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***Photo Captions:***

Beaver created wetland is home to moose, bear, otter, bobcat, fox, coyote, turtles, and many birds and amphibians.

Man-made “wall” to direct beaver activity on the high side of a trail.

Difficult location for a beaver to cut a tree! But they’re working on it!