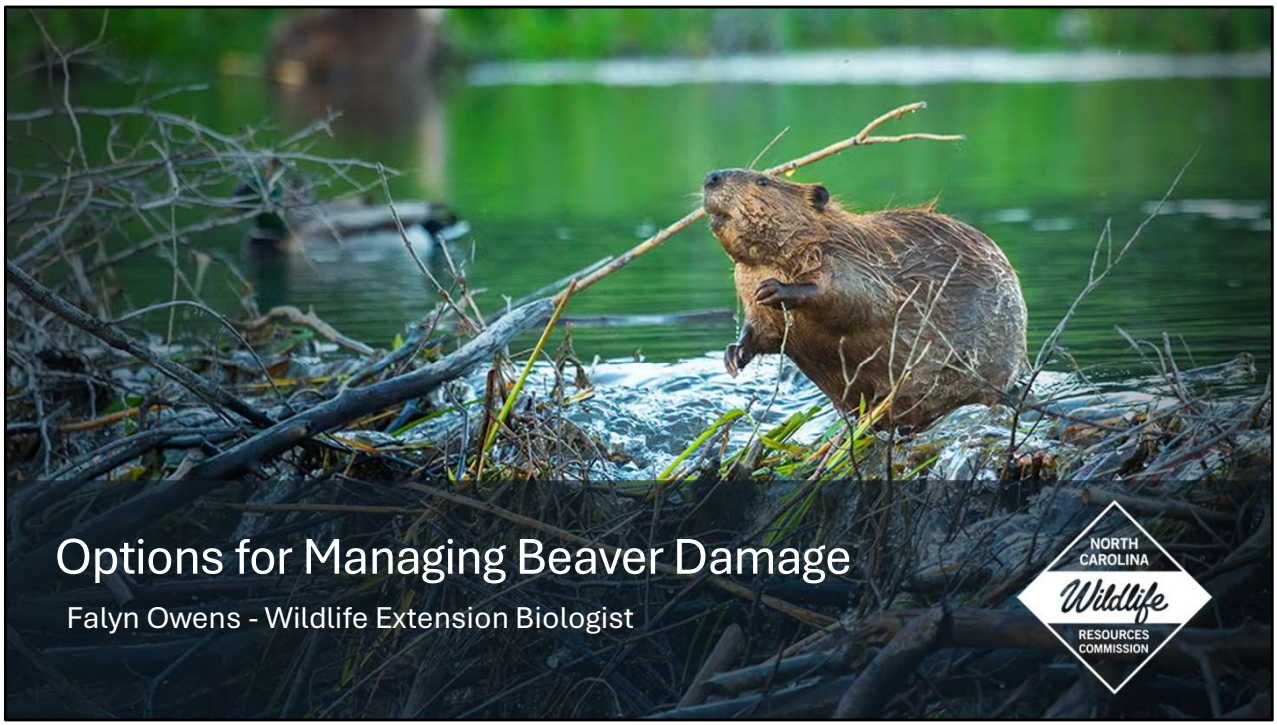
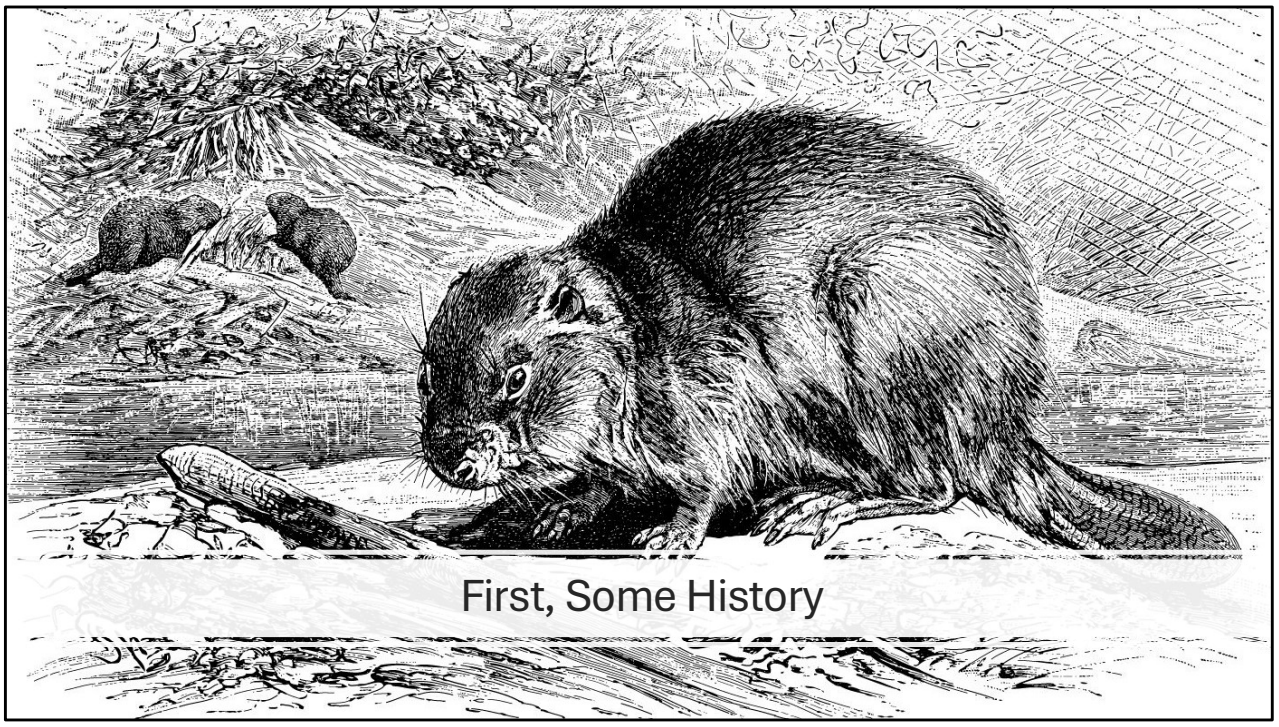
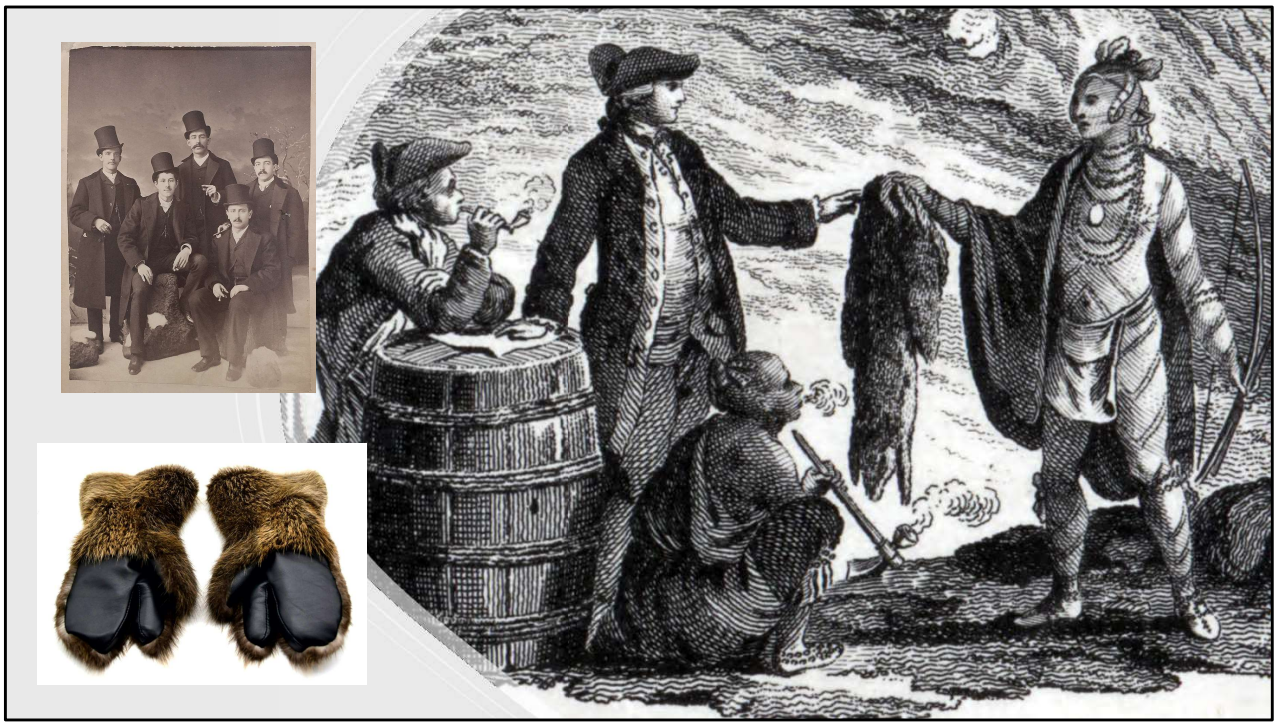


Presented by Falyn Owens on Nov. 20, 2025 for the NC Tree Farm Program

Description: Beavers are an ecologically and economically important species, providing habitat and clean water as they construct aquatic environments to suit their needs. However, those same behaviors can cause significant damage to timber and infrastructure. In this webinar, you'll learn a variety of situation-specific methods for protecting your property from beaver-related damage.



First, Some History



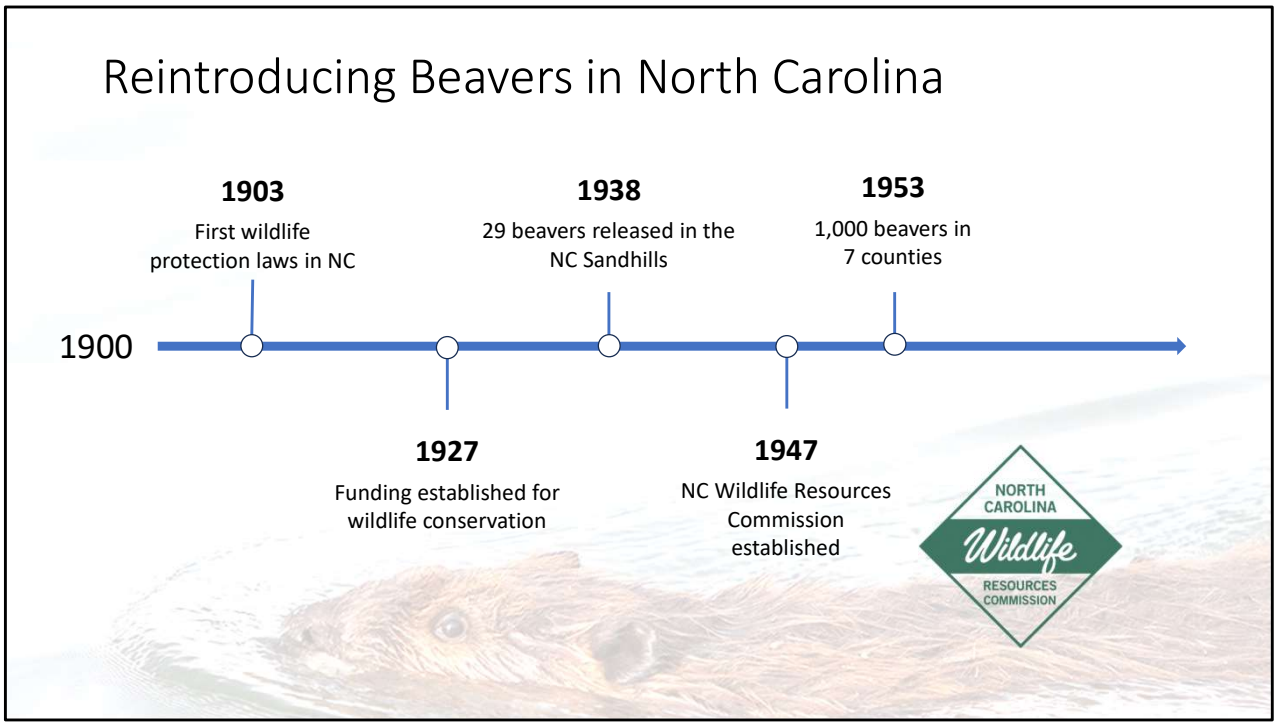
Beavers used to be BIG business in the colonial era of America. Beaver meat, fur, leather, and castor were highly valuable. The fur and leather were important for clothing, especially for shoes, gloves, and hats.

They were the *main trade item* in the colonies during the European settlement of America. In other words, beaver pelts were literally a form of money.

American beaver fur became a hot commodity in Europe and beaver-made clothes were a status symbol for wealthy Europeans. People moved to America to get rich harvesting and exporting beavers to Europe.

Massive amounts of beavers were harvested. There were no wildlife protection laws then, so beavers were fair game and considered an unlimited resource. Over time, they became increasingly rare due to relentless harvest.

By the end of the Civil War (1865), beavers were pretty rare, but they were still very valuable and continued to be sought after by trappers. Then in 1897, the last report of a beaver was recorded in North Carolina. That was it - no more beavers in North Carolina… for a long time (40 years, in fact).



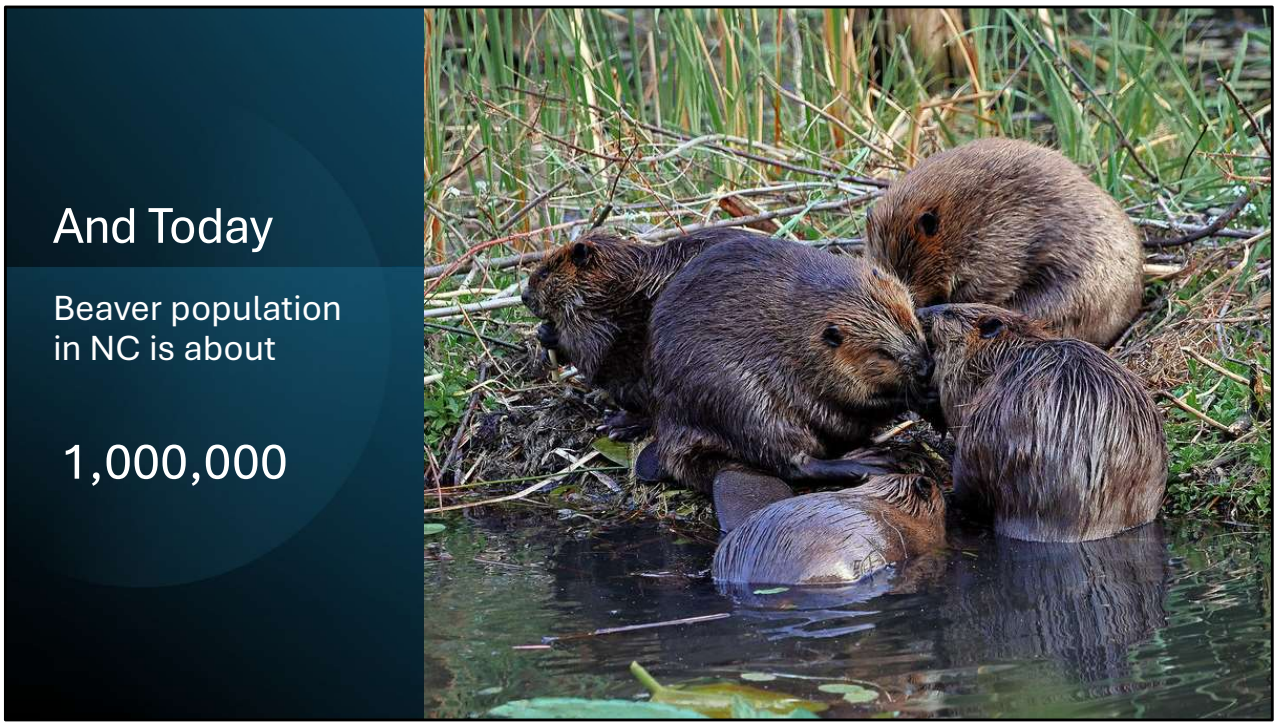
Fast forward to the early 1900s when state and federal governments, with a push from concerned citizens, started to accept that laws were needed so people could harvest wildlife without harming their populations. In 1903, NC got its first wildlife protection laws, which required a license to harvest wildlife. In 1927, the legislature designated funding to hire biologists and game wardens who would enforce the new wildlife laws and make sure those laws were based on science instead of public opinion.

In 1935, the NC General Assembly created the Division of Game and Inland Fisheries within the Department of Conservation and Development. Three years later, by public demand, beaver were reintroduced in NC. Twenty-nine were introduced at first, then more later. The same traps (foothold, cable restraint) that are used today were used to capture beavers in Pennsylvania and bring them to North Carolina.

In 1947, the Division of Game and Inland Fisheries became its own agency, the NC Wildlife Resources Commission. NCWRC is responsible for conserving all native wildlife in North Carolina, from huntable game species to endangered species and everything in between. NCWRC also manages public boat and canoe launches across the state, boating safety, public game lands, hunting/fishing/trapping laws and education, and much more. By 1955, there were 1,000 beavers in 7 counties.

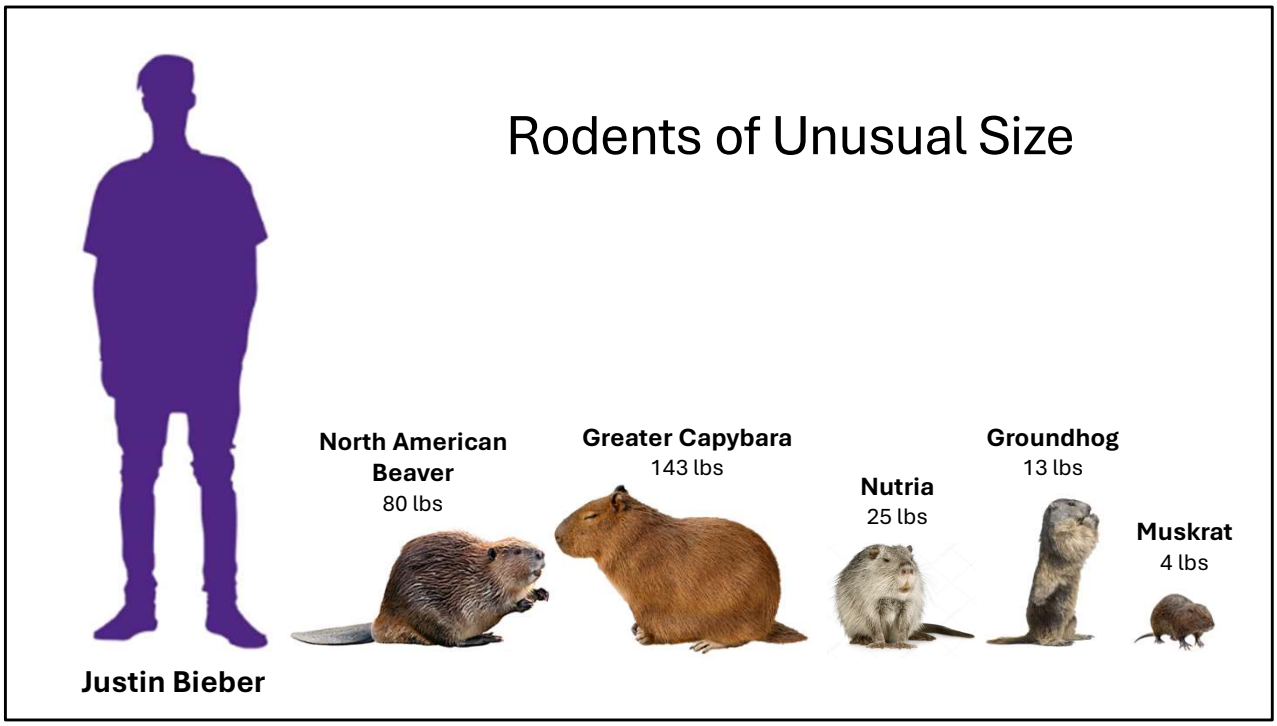
By the late 1980s, beavers were established in every county in North Carolina. That was nearly 40 years ago! This is a true conservation success story. Other places in the United States are much further behind, with ongoing restoration efforts in the Western U.S. You might have heard about of even read Ben Goldfarb's book, *Eager: The Surprising, Secret Life of Beavers and Why They Matter*, which talks about ongoing reintroduction and relocation in the Western U.S. We're ahead of the curve here in NC. We've already done it!

By the way, in North Carolina we've also reintroduced and restored otters, Wild Turkeys, Canada Geese, white-tailed deer, black bears, and others. We're still working to restore more native species, such as Red-Cockaded Woodpeckers, the magnificent ramshorn snail and various freshwater mussel species to name a few.



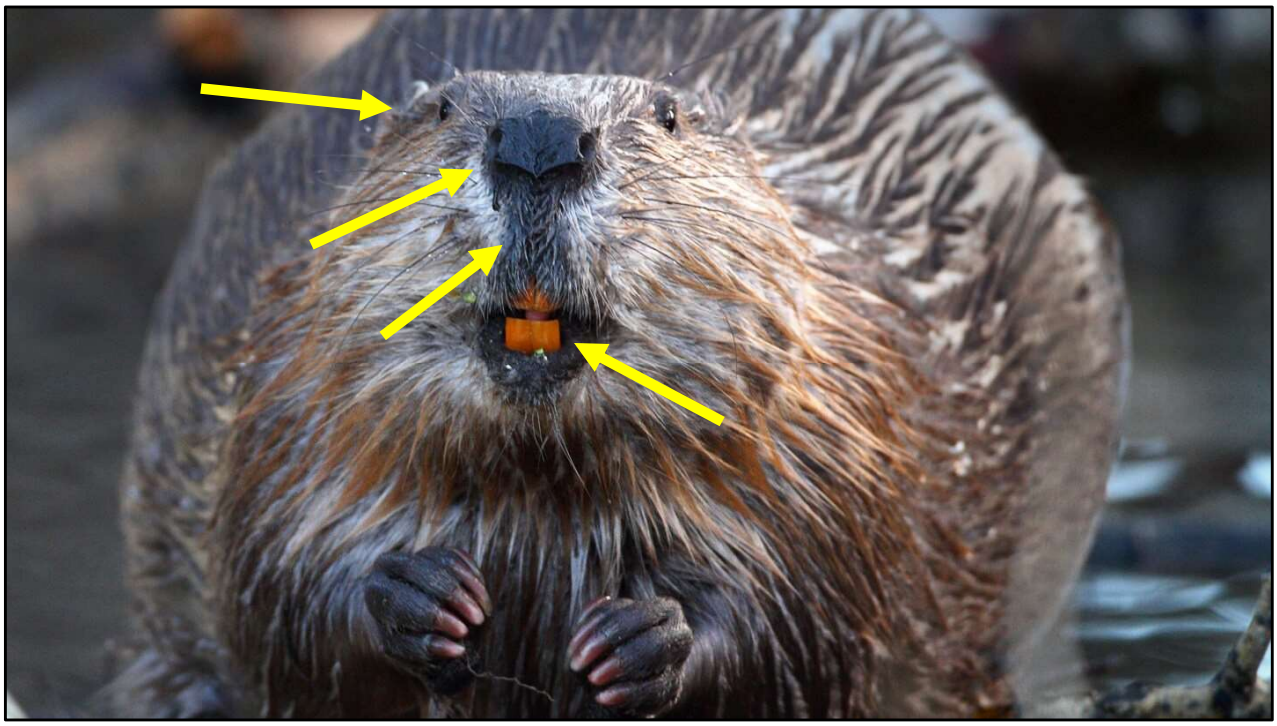
Current status of beavers in NC: they’re abundant and doing great!


A little beaver biology



North American beavers are the second largest rodent in the world (capybara is the largest). Other than the capybara, all of these large rodents are found in NC. They are all aquatic and found in or near water with the exception of groundhogs.

In case you're curious, Justin Bieber is 5'9".



Beaver's have some unique features that distinguish them from other species.

Beavers have orange teeth. Like all rodents, their teeth are constantly growing. They have to constantly chew or their teeth grow too long and they can die from not being able to eat.
Beavers can close their cheeks behind their teeth and close their nasal passages so they can transport branches underwater without getting water into their lungs.

They have big, dark noses with dark whiskers, a dark "moustache," small eyes and small-ish, dark ears. These features can help you differentiate a beaver from other large rodents like nutria and groundhogs.

"The intense orange-brown color of rodent incisors doesn't come from the filled pockets in the enamel, as was previously thought, but from a thin surface layer composed of aromatic amino acids and inorganic minerals."
https://www.acs.org/pressroom/presspacs/2024/april/iron-rich-enamel-protects-but-doesnt-color-rodents-orange-brown-incisors.html

How to you tell a beaver just by the face? No tails visible here to give it away. This is tricky for a lot of people; all of these were labeled as beavers online (don't trust ID labels on online photos unless they come from a reliable source!)

Notice that the beaver is "chonky." They're like the bears of the rodent world. Also notice that dark nose, moustache, whiskers, and tiny eyes.

Nutria have white whiskers and mostly furred noses with white hair from nose to chin. They always look a little like "grandpa."

Groundhogs have small, furred noses and relatively large eyes. Their ears are the same color as their body fur. Also their teeth aren't orange and they can be found far away from water.

Muskrats have small, pointed faces and furred ears – much more rat-like. They're also much smaller, only about the size of a small rabbit.

Beavers have large, webbed hind feet. They use these to swim and they're very capable in the water.

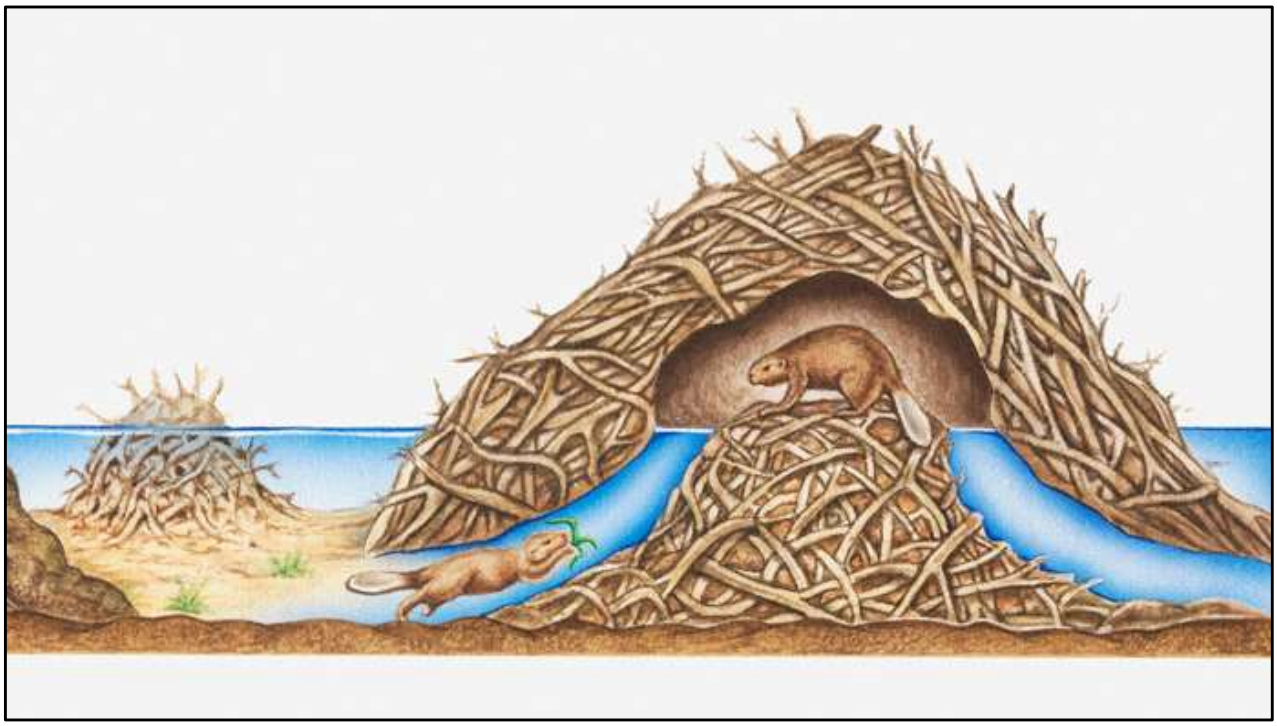
The second toe on each hind foot comes with built-in fur comb, which is unique to beavers.

Beavers have a flattened, paddle-shaped tail, unlike any of our other rodents. They do not use their tails to swim, but they do use them as an alarm signal. Their tails have no muscle in them – it's just skin, a little bone, and fat.

Beavers slap their tail against the water as a warning signal to their family that there's a potential threat nearby. Because they don't have muscles in their tails, you can see how the beaver has to put its whole body into flinging its tail against the water. Here (video) the beaver was probably responding to the fact that there were humans nearby – an unwelcome threat in their territory.

Beavers also communicate through scent. They're very territorial and will attack beavers that intrude on their territory. This is a beaver scent mound. They push mud and leaves out of the water to make a roughly beaver-sized mound, then mark it with their castor sacs. This sends a message for other beavers to stay out.

Beaver lodges are different than dams. A lodge is basically a beaver nursery and shelter that they build either in the middle of the pond out of sticks and mud, or dig into a streambank.



Beaver build their lodge so the only way to get in is through an underwater entrance. Inside, the lodge stays dry, though air gaps in the top allow air to circulate inside.

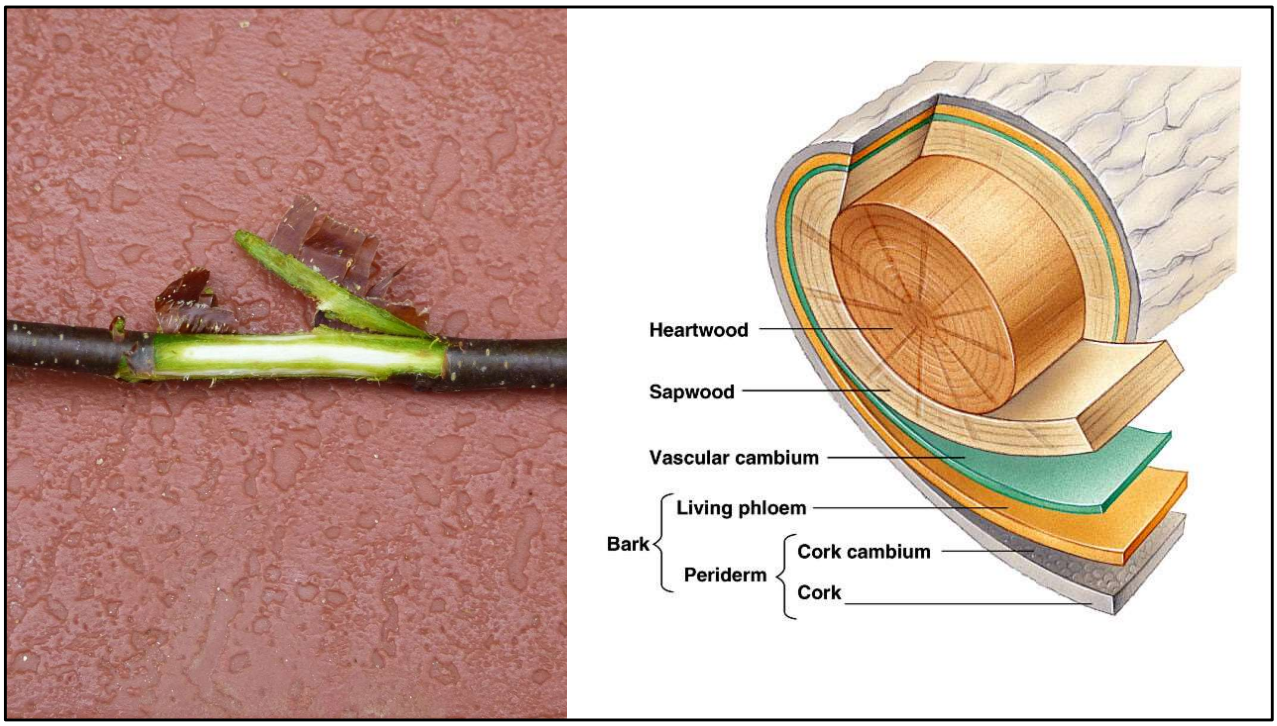
Family structure: beavers are relatively monogamous; a pair will stay together until one of them dies, then the other will find another mate. Females will stay close to the lodge, while males may roam a larger area. Average of 3-4 kits per litter (up to 9). The young will stick with their parents for 1-2 years before dispersing to find their own territory and mate. Beaver kits can swim from the first day they're born.

But this is really what beavers are known for, and what earns them the moniker, “ecosystem engineers.” They literally build their own habitat by altering water flow. They’re very good at it, and very quick – a beaver can build a functional dam overnight. Beaver dams are much like human-made dams – just a solid wall that blocks the flow of running water.

Why? Their home is the water, so beavers stop up flowing water to make wetlands for their personal use. Also, raising the water level brings the water to the trees, making them easier to access for beavers to cut down, and shortening the distance wood needs to be dragged get it into the water for storage.

This can be beneficial for ecosystems because they create wetlands for aquatic species. Also slowing down water is super important for preventing erosion and allowing sediment to settle, which improves water quality. More on this in a bit.

But what's up with beavers cutting down trees? It's literally what they eat.



Beavers are almost exclusively vegetarian. Technically they're "lignivores" or wood eaters. A major part of their diet is living, woody cambium.

Cambium is the bright green, living layer of tissue just under the bark on woody plants like trees and shrubs. Beavers do not eat dead wood (bark, sapwood, and heartwood), though they will chew through it to get to the tasty cambium layer.

Beavers also eat tender twigs, leaves, and other vegetation. They fell trees to get access to all the delicious cambium and tender branches high above. Once they take a tree down, they'll cut it into manageable pieces and store each branch under water to keep it fresh and moist. So a beaver pond in part serves as a personal refrigerator for beavers.

In the center photo you can see beaver snack sticks, where the beavers have chewed off all of the tasty cambium and left the dead sapwood underneath.

They don't just eat trees, but will also munch on aquatic vegetation and crops like corn and soybeans, which is pretty frustrating for farmers. The two photos on the left are images of corn stalks cut down and stored for later by beavers.

Benefits of Beaver ponds

- Cleaner water
- Reduced erosion
- Holds water during drought
- Recharges groundwater

Let's talk about the benefits of having beavers around - specifically those that come from beaver dams and ponds. Beaver ponds slow and hold water. This is very important for reducing flash flooding and total flood water downstream. Slowing the flow of water gives it time to absorb into the ground instead of getting shunted directly through our waterways. Good water management encourages the water to stay in place whenever possible. It's the same reason we build retention ponds.

Water held in beaver ponds has the time to seep into the ground to recharge our aquifers. Any soil or pollutants can also settle out of the water, so the water that flows out of the pond is cleaner. In areas that are prone to drought, holding water in place is critical for supporting life and communities between rain events.

While beaver dams create ponds where we might not want them, these beaver-built retention ponds actually reduce flooding downstream by holding water in place and slowing its flow.

Crucially, beavers create exceptional wildlife habitat for fish, birds, and other mammals. For anyone who wants a wildlife oasis on their property, a beaver pond is *it*.

These benefits are especially important in the Western U.S., where drought and water retention are serious issues. In many western states, they're working hard to restore beavers to national parks and other natural areas where their beavery engineering can restore more natural water flow.

Photo courtesy of Sarah Dunn, Colorado

The Downside

Flooding to homes, roads, and other property

Photo: Camp Perry Road, Perquimans County, April 2022

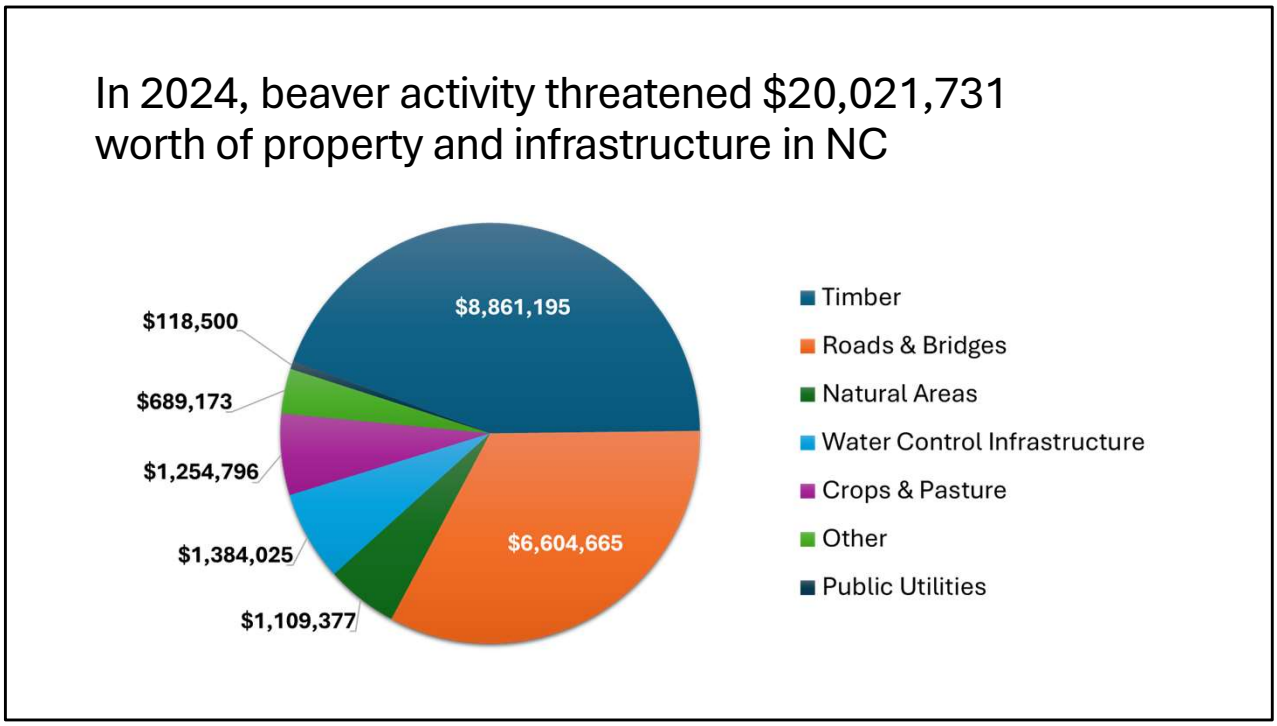
OK, now we're going to talk about some unfortunate realities of having beavers around. Beavers building dams and ponds is wonderful in natural areas, but in developed areas, they can cause serious flooding that damages property and can put human lives in danger.

Before beavers were extirpated, the vast majority of North Carolina was undeveloped, or at least not intensively developed like it is today. Since beavers have been restored, a lot of that land has been converted into homes, roads, farms, and places that are otherwise damaged or unusable if they end up underwater.

Unlike out West, which is mostly undeveloped public land (Bureau of Land Management or national/state parks) and large tracts of private land, most land in North Carolina has been developed for human uses.

In a perfect world, these “ecosystem engineers” would coordinate projects with us to maximize benefits for everyone. But beavers don’t speak human and we don’t speak beaver, so we deal with a lot of flooding due to our abundant beavers - to the tune of millions of dollars of flooding damage every year that we have to actively work to alleviate.

Several of these photos were taken in North Carolina in 2024 alone.



These data are from the 2023-24 Beaver Damage Management in North Carolina annual report: https://www.ncwildlife.gov/media/4217/download?attachment.

What can we do?

- Relocation?
  - Territorial
  - Homing instincts
  - Disease
  - Liability
- Flow devices
- Exclusion
- Responsible Trapping

So what can we do about these issues?

One option many people consider (at least at first) is relocation. But there are a lot of reasons why this is not a humane or responsible option here in NC. When there are a lot of beavers, there's not really anywhere you can release one that's not going to put it in a tough situation, or cause problems for people.

First, beavers are fiercely territorial, so a relocated beaver might actually be killed by the resident beavers. Also, beavers don't tend to stay where you put them, and will try to find their way back. We also have to worry about accidently moving diseases around. Beavers are considered a rabies vector species by the NC Department of Health and Human Services, and can carry other diseases such as tularemia and Giardia. Finally, if you relocate a beaver and it causes property damage there, you could be held liable for that damage.

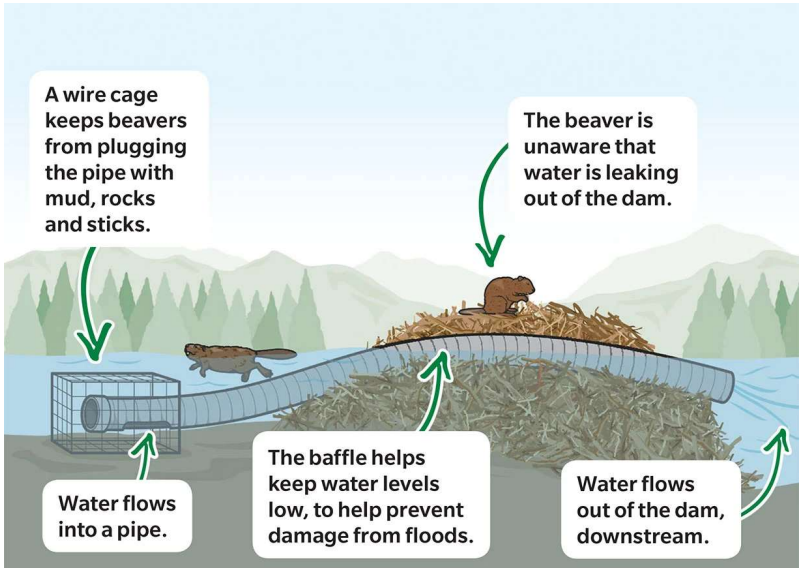
In a world where there aren't many wild places left, and those places are already full of beavers, where do you put them?

So how do we get them *not* to build dams where they're going to cause problems for us? Why exactly do they build dams in the first place, like, *instinctually*.

According to science, the answer is actually, "yes!" Kind of. It has more to do with *hearing* running water.

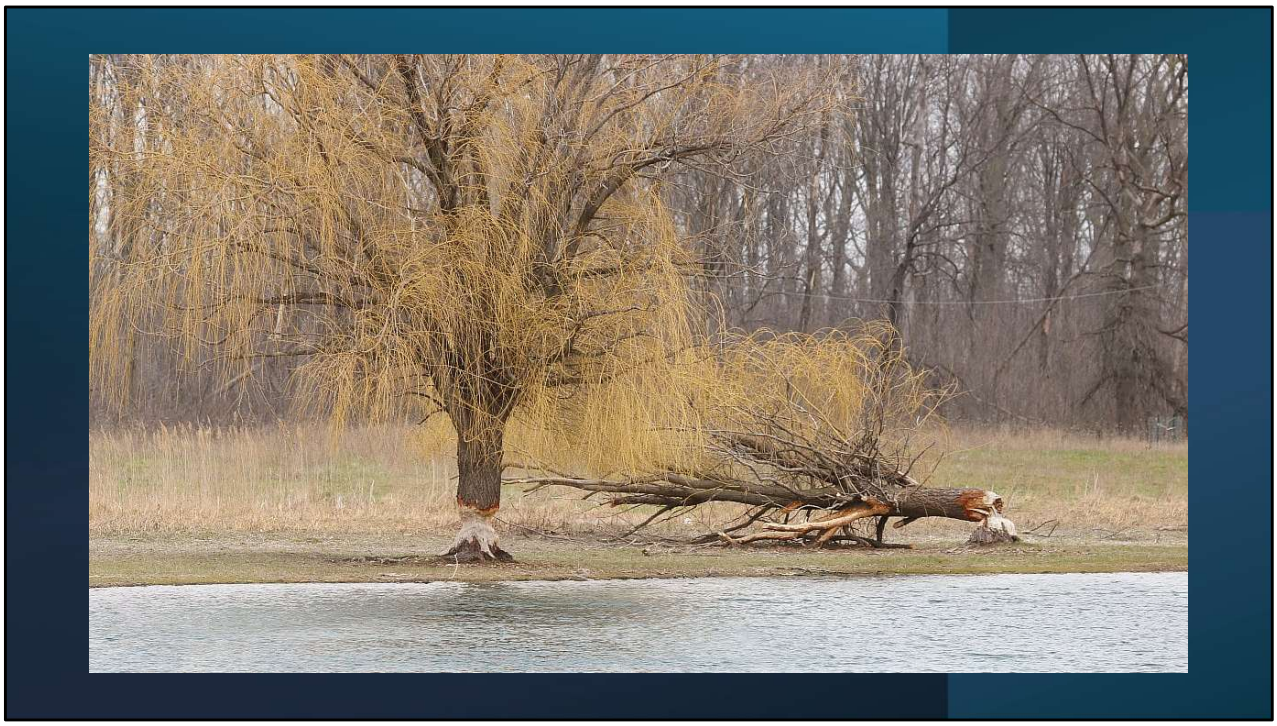
Swedish researcher Lars Wilsson (1960s) found out that beavers instinctually begin to build when and where they hear running water. No sound of running water? They don't build. But if you play the sound of running water out of a speaker, they'll start to pile mud and sticks onto the speaker.

The "Beaver Deceiver"



One of the ways we've learned to work with beavers' instincts is to design ways for water to flow where it needs without making the *sound* of running water. There are several of these designs, and they usually use pipes to allow the water to flow without making sound. They also use caging or fencing to keep the beavers and other debris from clogging the pipe.

These are great tools, but they require regular maintenance. The pipe needs to be regularly cleaned of debris, or it will get clogged and the area will start to flood again. Freeze/thaw cycles over the winter can burst the pipe and render the device useless. Also, if beavers decide to build another dam downstream (they often build several along a waterway), you'll need to put in one of these devices there too, and maintain that one as well. Often these are best installed by a professional if you want to make sure they're effective. Even better if you can get a maintenance contract to keep them in good working condition.



What about damage like this? Where there are trees near water, and that water has beavers living in it, those trees are likely going to come down.

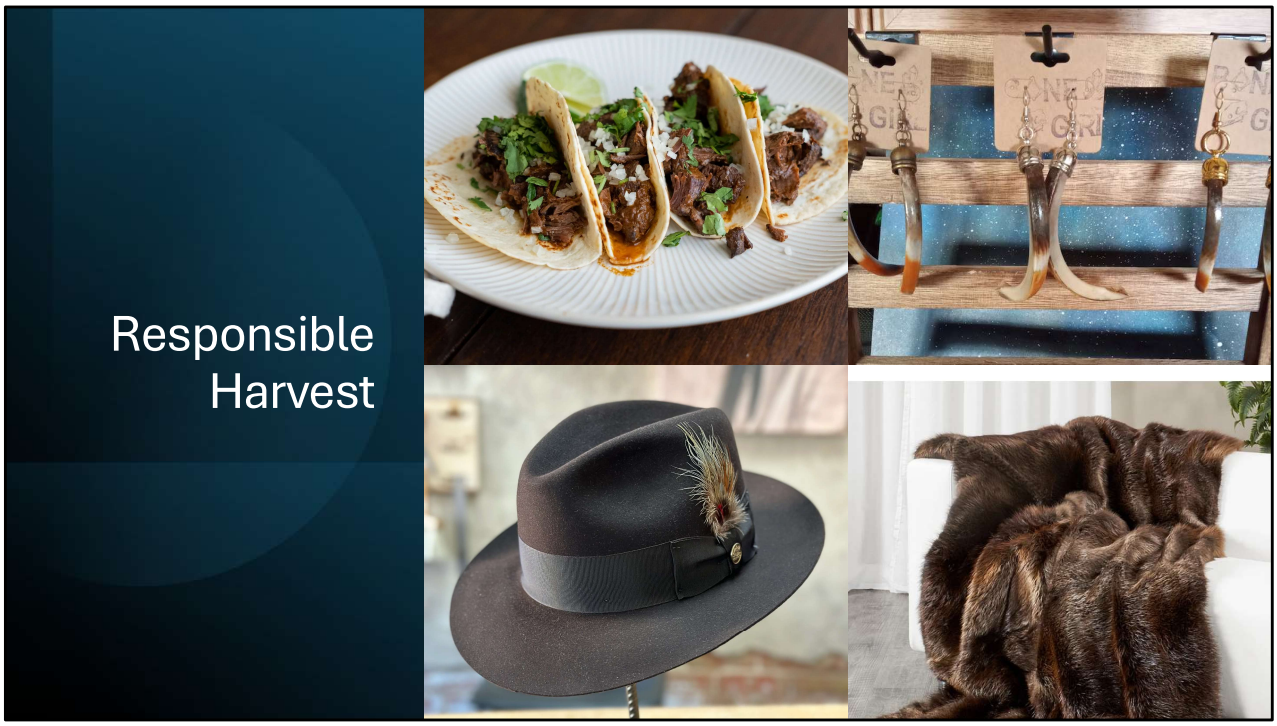
Good, sturdy fencing like this is a good way to protect specific trees from beavers (and other wildlife like deer).

Other Non-Lethal Options?

Adapt land use to allow natural water flow in floodplains

- Fishing
- Waterfowl hunting
- Bird watching
- Kayaking

Are there other options? We can argue that we probably shouldn't build homes and infrastructure in areas that are prone to flooding. But a third of North Carolina is in the coastal floodplain and it's hard to tell someone, "Sorry, your property is now a beaver pond." In some cases, reassessing our expectations for a particular piece of land can turn a "problem" into a new opportunity.



Modern regulated trapping, with safeguards that keep us from overharvesting animals, can also be a way to resolve issues while allowing us to enjoy the food, clothing, and jewelry that beavers can offer us.

Keep in mind that historically, beavers had natural predators to keep their numbers in check – cougars, bears, and wolves specifically. We don't have those predators on the landscape like we did in the past so humans are, for the most part, one of the only predators beavers have in NC now.

Trapping Resources

- Trapper's Education
- Contact a licensed trapper
- Contact a licensed Wildlife Control Agent
- NC Beaver Management Assistance Program

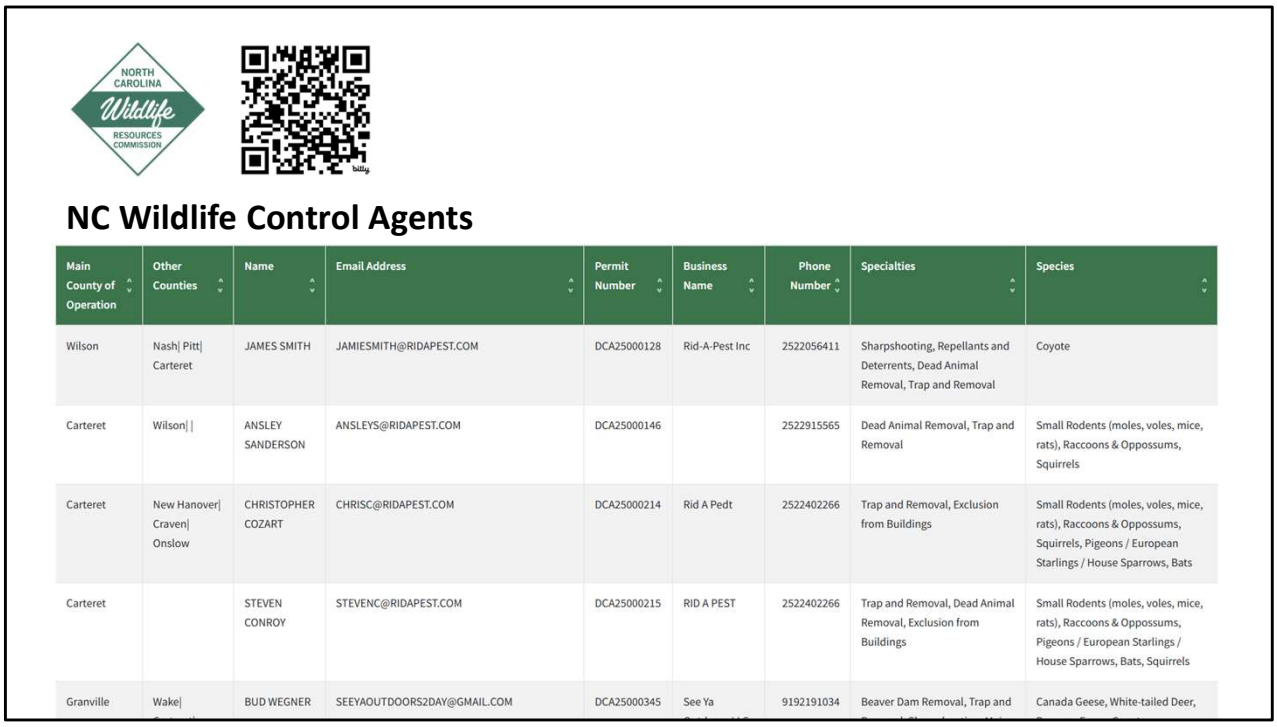
If trapping is a reasonable option for you, there are a lot of options. Trapping is not a one-and-done affair. Beavers will find their way to good habitat, so expect trapping to be needed every couple/few years, or even annually if you (or a trapper) is putting the harvested beavers to good use.

Learn How to Trap

Contact a Trapper

Beavers that are causing property damage can be trapped or otherwise lethally removed year-round. The North Carolina trapping season runs from October 1 through the end of February, when pelts are prime and beavers do not have dependent young.

Photo by Jason Wachter, St. Cloud Times:
https://www.sctimes.com/story/sports/outdoors/2016/04/22/beaver-trapping-age-when-fur-out-fashion/82378464/

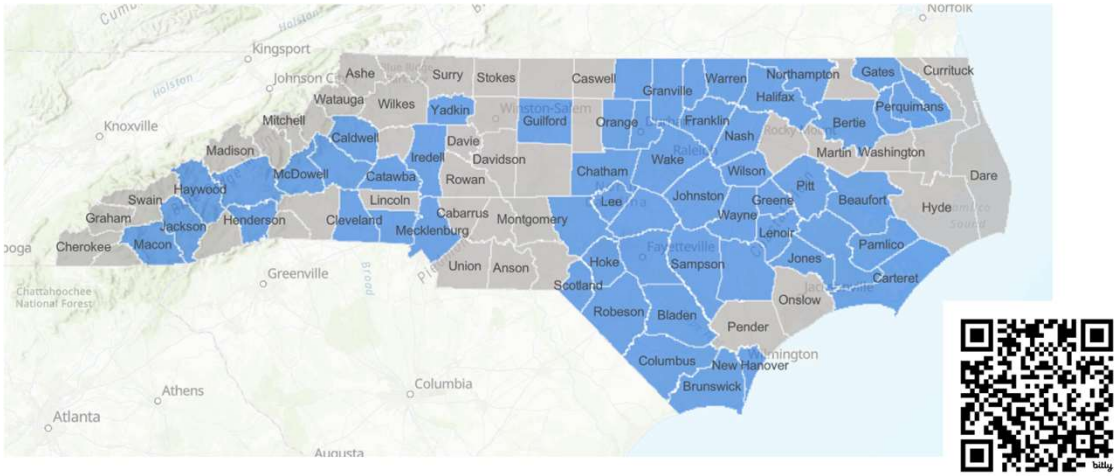


NC Wildlife Control Agents

Main County of Operation	Other Counties	Name	Email Address	Permit Number	Business Name	Phone Number	Specialties	Species
Wilson	Nash| Pitt| Carteret	JAMES SMITH	JAMIESMITH@RIDAPEST.COM	DCA25000128	Rid-A-Pest Inc	2522056411	Sharpshooting, Repellants and Deterrents, Dead Animal Removal, Trap and Removal	Coyote
Carteret	Wilson| |	ANSLEY SANDERSON	ANSLEYS@RIDAPEST.COM	DCA25000146		2522915565	Dead Animal Removal, Trap and Removal	Small Rodents (moles, voles, mice, rats), Raccoons & Oppossums, Squirrels
Carteret	New Hanover| Craven| Onslow	CHRISTOPHER COZART	CHRISC@RIDAPEST.COM	DCA25000214	Rid A Pedt	2522402266	Trap and Removal, Exclusion from Buildings	Small Rodents (moles, voles, mice, rats), Raccoons & Oppossums, Squirrels, Pigeons / European Starlings / House Sparrows, Bats
Carteret		STEVEN CONROY	STEVENC@RIDAPEST.COM	DCA25000215	RID A PEST	2522402266	Trap and Removal, Dead Animal Removal, Exclusion from Buildings	Small Rodents (moles, voles, mice, rats), Raccoons & Oppossums, Pigeons / European Starlings / House Sparrows, Bats, Squirrels
Granville	Wake|	BUD WEGNER	SEEYAOUTDOORS2DAY@GMAIL.COM	DCA25000345	See Ya	9192191034	Beaver Dam Removal, Trap and	Canada Geese, White-tailed Deer,

Wildlife control agents can help you deal with issues when wild animals are causing property damage. Like any contractor, you hire them to do work on your property, which can include making home repairs to keep animals out, or actually removing an animal that is causing damage.

Beaver Management Assistance Program (BMAP)



This is a state-led program available in many counties in North Carolina that helps landowners manage beaver damage on their property. You can call, schedule a free consult, and get help removing beavers or dams at an affordable rate ($25 per visit, $150 per dam removal).

Each county pays into the funds used to provide services for landowners, and not all participate. USDA Wildlife Services staff perform the services and are very professional.

Need Advice?

- Get info on beaver options and resources
- Get advice about other wildlife issues

NC WILDLIFE HELPLINE
HELPING PEOPLE SOLVE WILDLIFE PROBLEMS

866-318-2401
8 am – 5 pm, Mon-Fri
HWI@ncwildlife.gov

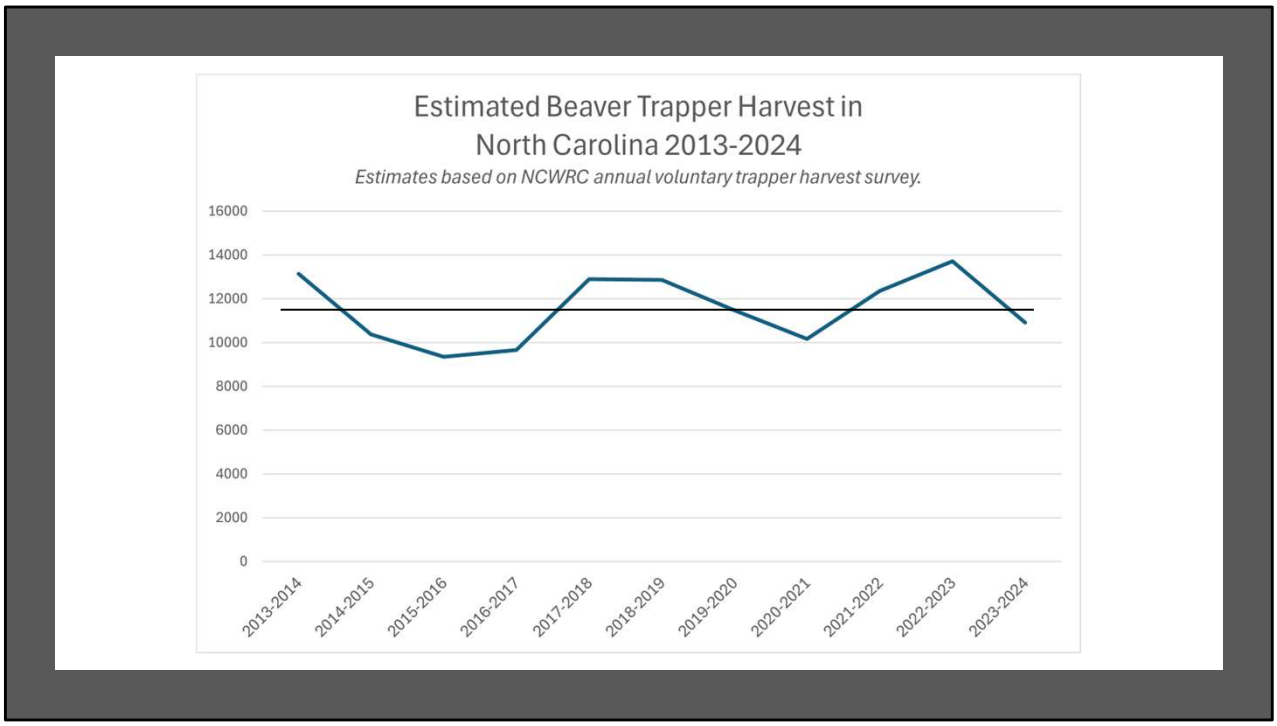
Every situation is different and no method is inherently good or bad, as long as it's done responsibly. Some methods work better in some situations, some in others. The property owner gets to decide what's best for them. We can have our beavers and eat them too, as long as we harvest them ethically and work toward better infrastructure that allows us to coexist with wildlife.

If you ever have questions about wildlife, especially regarding wildlife conflicts, or concern for a wild animal's health, you can contact the NC Wildlife Helpline and speak with a biologist who can answer your questions. The Helpline is available by phone 8 am – 5 pm, Monday – Friday, except state holidays. You can email the NC Helpline at any time.

Again, specifically in North Carolina, relocation is not an option, so physically removing beavers from your property will involve lethal methods. Ideally they are put to good use (as food, pelts, etc.) and don't go to waste.

QR code leads to the July-August 2023 issue of Wildlife in North Carolina magazine, and an article called *The Beaver's Tale*, written by Falyn Owens, which in many ways is a written version of this talk.


Bonus Slide!



We can't do a census for beavers (they don't come to the door when you knock like humans are supposed to). Instead we use proxy data to get a peek at how the beaver population is doing. For that, here in North Carolina we use reports from licensed trappers to keep track. Trappers provide these data voluntarily to us, and they're incredibly valuable to give us an annual snapshot of whether the beaver population is increasing or decreasing.

Here we see the beaver harvest is sometimes a little higher, and sometimes a little lower, but over time it's pretty stable. A stable long-term trend tells us that the beaver population is recovered and doing great! Keep in mind that the number of beavers harvested every year is just a tiny amount compared to the total number of beavers in the state. If we were overharvesting beavers, we'd see an overall downward trend as beaver populations decreased over time.