

Beaver Food and Feeding Habits

June 30, 2020 Janet Pesaturo



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A beaver eating ferns. I haven't seen ferns mentioned in diet studies, but fern consumption isn't surprising, given that beavers eat a wide range of plants when they can..

In my first post on this topic, [Tree Preferences of the Beaver](#), I summarized the basics: that beavers (*Castor canadensis*) prefer most deciduous trees over conifers, that some hardwoods are more desirable than others, that aspen is the all time favorite, and that heavy conifer consumption usually presages the disappearance of beavers. But I have long noticed exceptions, and recently a very surprising one. I offered quaking aspen branches to beavers whose main woody menu item is eastern white pine, and their reaction was underwhelming. In short, they were initially uninterested and eventually took only some of the branches. What follows is a report of what I did, camera trap photos and videos of the beavers' response, a detailed discussion of the beaver's diet, and my thoughts on the well-being of these beavers and their lack of enthusiasm for aspen. I invite you to share your own thoughts about beaver food and feeding habits in a comment at the end.

Beaver Eating Pine

Let's start with a video showing that these beavers really were eating the pine bark, not just hauling it off for building material. And it wasn't just the one incident in the video. Many debarked white pine sticks littered feeding spots around the pond edge.

An Offering of Aspen

My original intent was to use quaking aspen (*Populus tremuloides*) to attract beavers for a photo shoot with a DSLR camera trap. I was certain that these beavers, who have few woody options other than conifers, would rush to the aspen branches. The result would be lovely photos of grateful rodents happily enjoying favored fare. But that never happened.

Their lack of enthusiasm for my gift surprised me so much that I decided to explore it a bit more. The following was all done in Massachusetts in late April through early June of 2020. Bob and I cut the branches from a quaking aspen in our backyard and carried them in backpacks to a beaver pond. We were very casual about this, and handled the branches with bare hands, making no attempt to keep human scent off of them. So this isn't very scientific, but still interesting.

Trial 1

In late April, we placed a bunch of thin quaking aspen twigs, (about 1 to 2 feet long and about 1/4 to 3/4 inch diameter), 100 feet from the pond. This spot was several feet off a beaver run, near where they were cutting young white pine. The camera trap captured a beaver examining the twigs and leaving without taking any. Total rejection. They were still in place two weeks later at the next camera check.

Trial 2

Next, we placed several fresh branches, about 1 inch diameter and 1 to 2 feet long, in the same spot as above, in early May. The camera was checked 4 days later. No beaver had visited.

Trial 3

Then on May 9th we placed 4 or 5 fresh branches, about 1 inch diameter and 1 to 2 feet long, in the same spot as in Trial 2. Camera trap data showed that 5 days after placement, a beaver carried away all but one branch. Four days after that, a beaver carried away last one. So, all were eventually taken, but not with the mad enthusiasm I had initially envisioned.



A beaver hauling away a quaking aspen stick in trial 3

Trial 4

Also on May 9th, we placed 2 fresh branches, about one inch diameter and 1 to 2 feet long, on a large, active scent mound at pond edge. I knew that a beaver would encounter the branches very soon after placement, since they were working almost constantly on the mound. The day after placement, and after several visits to the mound, a beaver took one of the branches. The other was ignored as the beaver (or beavers) continued working on the scent mound. Two days after placement, the ignored branch fell into the pond, having been trampled by mound building beaver(s). Here is a video showing this:

Should Any of this be Surprising?

Initially I was surprised by two observations:

- That these beavers appeared to be thriving despite the fact that eastern white pine was their major woody food source.
- That said beavers did not go bonkers for the aspen.

Should either be surprising? I am still perplexed about their lack of enthusiasm for aspen, but

after reading up on beaver food and feeding habits, shared below, I decided I was wrong to think they shouldn't be thriving. The guideline that high conifer consumption means desperation is just a guideline, not something to be taken literally in all situations. It's way too simplistic.

Beaver Food and Feeding Habits – The Details

More Nuanced Guidelines

These are things to consider when trying to understand why a colony of beavers is eating what they're eating, and whether they are desperate or well off.

- Beavers are “choosy generalists” – they prefer certain species, but even when those are available, they may take less preferred foods in quantity.
- Desirability of a tree or shrub may differ from season to season.
- Desirability of a plant may differ from site to site.
- Generally deciduous trees are preferred but sometimes conifers are eaten in quantity.
- Conifers are not all equal in the eyes (or noses) of beavers. Some are taken in significant quantity. In the southeastern US, Virginia pine and loblolly pine may comprise a substantial portion of the diet. In the northeastern US, they avoid young eastern white pine in fall, but not in spring. (But that doesn't mean the select FOR it in spring. It just means they don't avoid it.)
- In the western and far northern portion of the beaver's range, conifer consumption is unusual and typically does mean desperation.
- Tree age is important for some species but not others. For example in a study in MA, they cut birch of all diameters available but avoided large diameter maples, pines, and oaks.
- Cutting trees far from the pond is riskier than cutting them close to the pond because beavers are more vulnerable to predators on land. Therefore, beavers may venture further inland only for the most desirable trees and readily take less desirable trees at the pond edge.
- Sometimes beavers avoid repeatedly browsed trees and shrubs because repeated browsing causes the plant to produce unpalatable phenolic compounds as a defense.

Spring and Summer Diet

If available, succulent, actively growing herbaceous plants are the bulk of the diet. Many aquatic plants are eaten: water lilies (both *Nymphaea* and *Nuphar*), cattails, sedges, and rushes. Water lilies are often the most important component of the diet, where available. Sometimes beavers raid crops. I have found (see head photo) that beavers also eat ferns. Beavers eat leaves, twigs, buds, and cambium of trees and shrubs in spring and summer – more so where non-woody plants are relatively unavailable. For example, in the Northwest Territories of Canada the leaves and growing tips of willows are the main foods in July and August.

Late Summer through Fall Diet

As plants mature, greenery becomes dry and fibrous but mast is produced, so beavers consume less greenery and more berries, fruits, and nuts. Acorns are an important food source and beavers may cut trees to access them and other mast. In agricultural areas, beavers consume corn and

other grain with great gusto. But, as always, beavers will live primarily on the leaves, twigs, and inner bark of trees and shrubs, if other foods are not available.

Fall Caching

In fall, beavers pile up tree and shrub branches in the water near their lodge for winter consumption. This way, they will have food they can access under water when the pond is frozen over. *Beavers also cache water lily rhizomes.* This is important because it may mean that if they have water lily rhizomes, beavers can do just fine even if the major woody food source is a less preferred tree.

Winter through Early Spring Diet

Beavers consume material from their cache while ice covers the pond, but even in winter they may emerge from the pond to forage if the weather warms and ice melts. This usually means cutting more trees and shrubs, but could also mean feeding on acorns or other nuts on the forest floor. After the ice melts but before spring green-up, beavers subsist on trees and shrubs, water lily rhizomes if available, and perhaps any hard mast remaining on the forest floor from the previous fall.

Summary and Final Ponderings

My knee jerk response that beavers hate conifers and love aspen, was obviously too simplistic. A closer look at the research on beaver diet and at my beavers' habitat made me realize they are far from desperate. On the contrary, they live in the lap of luxury. The pond is full of water lilies which, again, they can eat year round. There are also cattails, various pond weeds, grasses, sedges, and ferns. Close to the shore, there are blueberries. A little further inland, mature oaks and mature hickories drop their nuts on the forest floor.

Climate warming is a factor, too, in terms of my perception and the beavers' situation. I've lived in Massachusetts for most of my life and think of it as a harsh, cold-winter climate. But nowadays winters are a little shorter and milder, which for beavers means more time for foraging greenery and mast, and less time with nothing but bark and twigs. Overall, these beavers are probably so well fed throughout most of the year that few aspen branches were nothing to get excited about.

I do wonder, though, if familiarity is an issue. Quaking aspen is uncommon in the area where these beavers live, and they may never have encountered it. It may take awhile for them to recognize it as palatable. Or, perhaps their gut microflora (which aid digestion) are adapted to their current diet and not to aspen, so they instinctively avoid it...at least temporarily. Biologist Uldis Roze proposes differences in gut microflora to explain why different porcupines have different tree preferences. I haven't found any research on this with regard to either beavers or porcupines, but it's something to think about.

Sources

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