A Tribute to Beavers
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The talk at Royal Lake Park often turns toward the beavers, so let's get the scoop! When beavers (*Castor canadensis*) fell trees in conspicuous places or private property, people voice concerns. Beavers garner additional negative publicity after their dams flood private land or habitat sanctuaries. On the surface, North America's largest rodent appears to wreck a destructive wake, so now let's delve beyond its notoriety and examine its environmental roles.

First, let's understand beaver habitats. In pre-Columbian Northern Virginia, swamps and wetlands separated waterways from dry forests. This area's traditional wetland flora began in the water (cattails, arrowroot, sedges), moved to the shore (black willows, American elderberry, silky dogwoods, river birches, alders), continued towards the woodland edge (box elders, maples, sycamores, some of the red oak members), and finally reached mature forests (white oak group, many red oaks, pignut hickories). The technical term for this clustering of species at certain elevations is "vertical zonation." Europeans arrived, clearing much of the woodland and draining wetlands for agriculture. Modern developers continue deforestation for construction projects. However, streams make poor building locations. Land parcels with springs are donated to municipalities, which convert the "useless" plots into parks. Today's stream valley parks (SVPs) are the result of squishing streams and surviving forests together while losing transition zones (and erosion control buffers) in the process. In fact, KPW neighbors several such parks: Pohick SVP, KPW Park, Crooked Creek Park, and even Royal Lake, which is a dammed junction of two streams.

Beavers play a key ecological niche through maintaining the water-to-forest riparian zone. These creatures may build lodges, but they are best known for dam construction. Swift, stream currents carry sediments from eroding shorelines, but the beaver-dammed water forms a relatively still pond, enabling suspended particles to settle. As with any other floodplain, the resulting nutrient-rich silt accumulates into fertile soil (e.g., the farmer's coveted bottomland), but the water restricts plant types to aquatic and shoreline species. In turn, beavers eat a vast assortment of these aquatic plants. The rapidly-growing riparian plants benefit from the beavers' pruning and thinning. Like all rodents, beavers' teeth continuously grow, so they file their teeth by gnawing on wood and feasting upon the bark of shoreline trees. Any extra wood is applied towards dams and lodges. The ancestors to the woody plants that beavers clear (willows, silky dogwoods, birches) evolved to survive harsh grazing; new growth soon sprouts from the stump to produce a sturdier plant than without the trim. The plants' near-surface root network and the dam-slowed pond water help stem further erosion from an otherwise energetic stream.

Since beavers do not venture far inland, the mud and wood for dams must be near the shore. If suitable dam logs are unavailable, a food source diminishes, or some other unfavorable factor emerges, the beavers move from the site. As the unkempt dams age and break, more woody riparian plants root in the silt. These trees entice the beavers' return, new dams flood forest vegetation while opening habitat for aquatic flora, and the dynamic cycle renews. Huntley Meadows is one of FCPA's most renowned parks for beaver activity, but they presently appear to be cycling out and wetland conservationists are examining strategies to maintain the dam effects.

Less than 20 years ago, the plot where the Springfield Metro station now stands formerly held such a vast network of beaver dams that I could "walk across the pond." Conflicts with human interests and automobiles removed many beavers from Fairfax County. The currently ubiquitous site of forest trees *leaning over* streams is unusual in traditional beaver country. Beavers continue seeking areas with flowing water and abundant vegetation, and they seem willing to transform modern SVPs back into the historic habitat. Letting the beavers have their way would curtail erosion impacts, but often people fear beaver damage to forest trees. Yes, direct beaver damage and/or flooding will kill slow growing, deep-rooted highland oaks and hickories. However, these species do not belong so close to water in the first place and will soon be replaced by more suitable lowland flora.

Royal Lake has a small beaver population, and left unchecked, some residents wonder about the rodents' impact. The stark pond to woodland boundary might remain along steep inclines, such as the peninsula

directly across from Royal Lake dam. Expect to occasionally see fallen trees and other beaver activity there, up to several yards inland. To get an idea of how a healthy beaver habitat appears, complete with zonation, go to Lakeside Park and stand on the old marina blacktop. See how many plant species discussed within this article you can find, though some natives are smothered under invasive honeysuckle vines. Can you locate where new branch growth conceals beaver bite marks on gnarled stumps? Study how stream silt settles in a pond (albeit artificial) thereby creating deltas and observe how wildlife benefits from this ecosystem. You might also see a lodge, beaver scent piles, or the animal in action!

For more beaver bits, check out these links:

http://www.beaversww.org/
https://www.fairfaxcounty.gov/parks/sites/parks/files/assets/documents/naturalcultural/steward-ship%20brochures/beavercard.pdf
https://www.fairfaxcounty.gov/wildlife/beaver

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