A Natural History of the Parson's Brook Conservation Area

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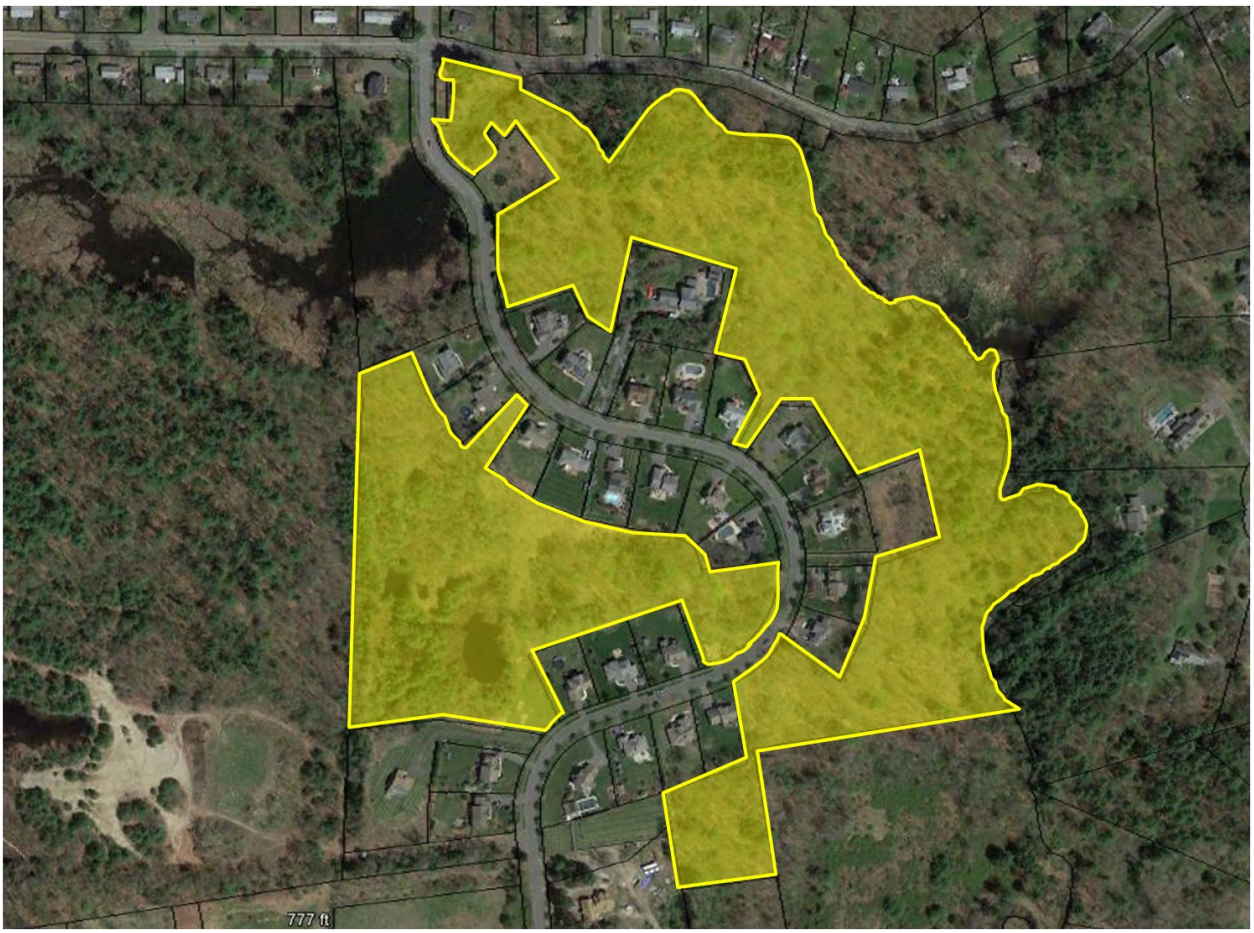
December 2014

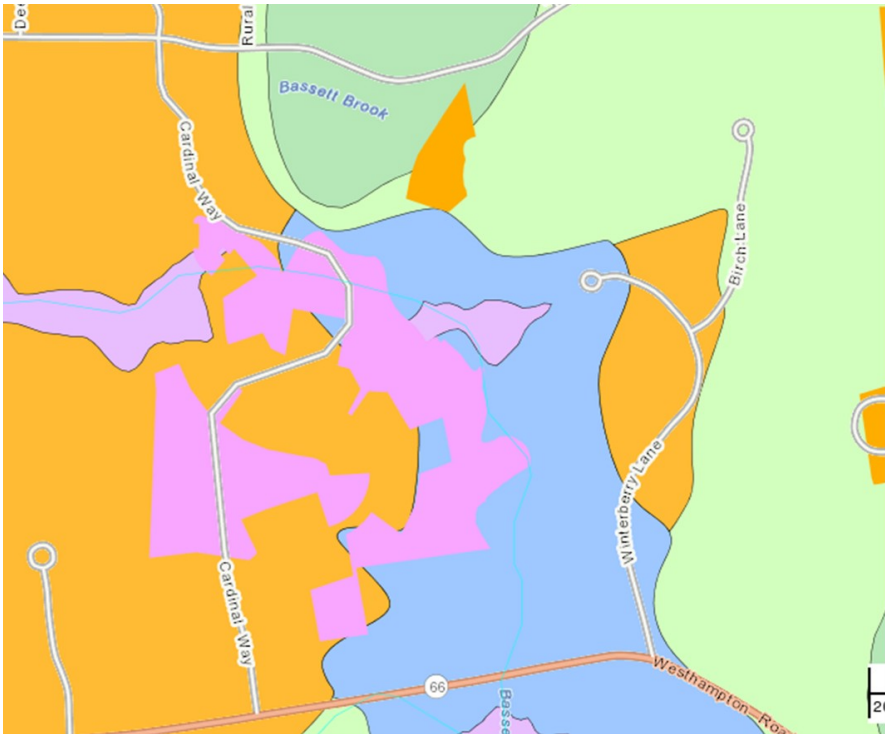
Parson's Brook Conservation Area

Protected in 2005 as a condition of a cluster subdivision, this 27-acre conservation area is split into two sections, ten acres on one side of the subdivision road and 17 acres on the other. Not only is the conservation area physically divided, but the two sections are very different in character and composition. The ten-acre block contains a mix of habitats that have developed on old gravel pits and clearings, while the other section has a combination of young forest, older forest and Parson's Brook itself. The brook is the highlight of the conservation area. And even though there are roads and homes nearby, walking along this shaded corridor feels like you're in a remote, wild place.



Geology

Fifteen thousand years ago, this site was under about 30 feet of ice-cold, glacial lake water. It was far enough from the shoreline and deep enough to accumulate lots of fine silt that became clay layers, deposited on top of an underlying rocky, glacial till. Eventually the lake level dropped and the glacial clays were overtopped with coarse sands and gravels as this landscape became part of a vast outwash plain that covered most of southwestern Northampton.



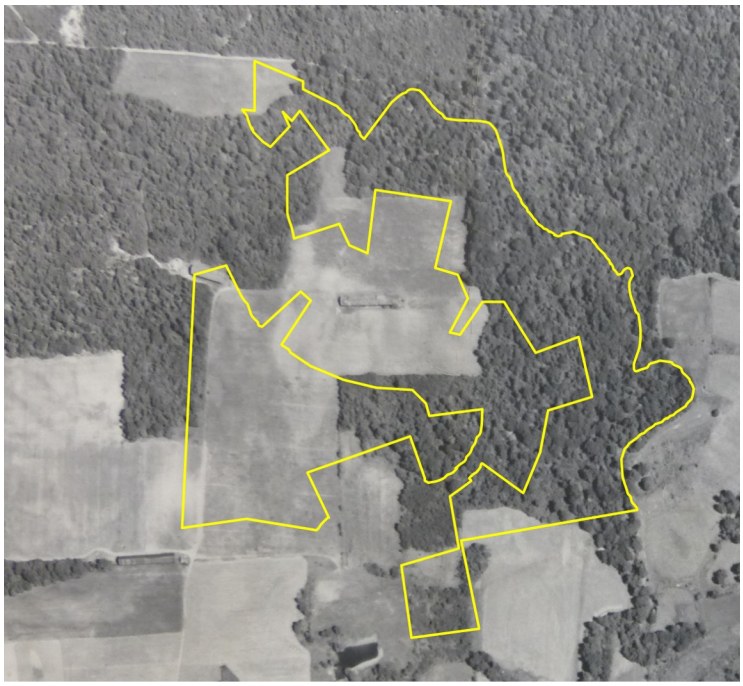
Surficial geology and the conservation area overlaid. Darkest green= drumlin; lighter green= till; orange=glacial outwash sands; blue= glacial lake Hitchcock clays; light pink—recent alluvium along Parson's Brook; magenta= overlay of conservation area. *From Mass GIS.*

In the intervening 12,000 years, Parson's Brook has cut down through both the sands and the underlying glacial lake clays. Today at the bottom of the brook, what you find are the rounded rocks and boulders left behind as glacial till and in one small stretch, one of the few exposures in Northampton of the underlying bedrock--200-million year old red sandstone.

Remnants of an old dam in the distance, with brook flowing in sheets over the exposure of 200-million year old sandstone. A few glacially-rounded cobbles can be seen along the margin of the brook.

Human History

The property's glacial history has profoundly affected how the landscape was used by people and even the vegetation patterns we see today. For instance, in the aftermath of fires set by the local Native Americans, the broad plains of glacial outwash would have developed into sand plains and pine barrens, dominated by fire-adapted species like pitch pine, white pine, oaks, low-bush blueberries and grasses dominating. In contrast, the tighter soils derived from the glacial lake deposits and more recent organics would have supported a much more diverse flora, including sugar maple, ash, Canada yew, and wood horsetail.



The outlines of the conservation area on the landscape in 1952, when it was mostly open farms and forest (*above)* and a few years later when gravel operations had begun to the south and west (*below). Historic aerial photos courtesy of Northampton DPW.*

Based on the sandy soils and what we know of the Nonotuck's use of fire, it is likely that they burned this landscape every few years. The practice of burning continued even after the English arrived, who like the Nonotuck before them wanted to keep down the underbrush, in this case to provide forage for cattle and swine. And although this area was several miles from the original home lots, the pine forests that grew in this part of town would have been familiar to the early residents. Not only were the pine and oak used for timber and firewood, but the resinous branches and knots from the white pine and pitch pine were used in lieu of lamps at night. Known as candle wood,

it was a precious commodity, with most of the collecting done in the fall. In fact, it was so valuable that as early as 1662 Northampton residents passed a series of orders that restricted the collection of candlewood within seven miles of the meeting house.

By the 1720s, all of this land, which had once been held in common, had been divvied up and sold to individuals. By the 19th century, all of the good timber in this part of Northampton had been cut, but because the sandy soils made for poor farming, the area remained thinly settled in spite of being cleared. In fact, it wasn't until the 1930s that more people began moving into this part of town.

By the end of WWII, this conservation site was part of a farm and a large portion of it had been converted to hayfields. In the 1950s, a number of sand and gravel operations began mining the thick sand deposits in the vicinity and by 1965 a small sand and gravel operation began in this property's southeast corner. This operation gradually expanded west, and by the time the subdivision was proposed, some of the abandoned gravel pits had been regraded and were growing back into grasses and brush, while others were still fresh scars on the landscape. As part of allowing for smaller lots in a cluster subdivision, one of the conditions for approving the development was the donation of land; in this case, seventeen acres on one side of the road and ten acres on the other.

Vegetation Patterns

In the decade since the land was set aside as a conservation area, the property has been unmanaged and now supports a mix of old fields, young forest, older forest, three small ponds, shrubby wetlands, seepy hollows, part of a beaver pond, and Parson's Brook (*see Vegetation Map on next page*).

Due to its history of alteration, it also supports an ever expanding amount of invasive plants, including loads of autumn olive and multiflora rose, as well as an abundance of Morrow's honeysuckle and Asiatic bittersweet. There are also lesser amounts of glossy buckthorn, Japanese barberry, *Phragmites* and purple loosestrife. In 2014, many of the

Open Water
& Marsh
Uplands
1: Hemlock Dominated Stream Corridor
2: Red Oak Dominated Woods
3: White Pine/Oak
4: Young Red Oak/Big Toothed Aspen
5: Open Fields
Wetlands
W-1: Beaver Pond/Marsh
W-2: Open Water
W-3: Alder/Silky Dogwood
Pitch Pine Barrens/
Open Sand
1
2
3
4
5
W-1
W-2
W-3

purple loosestrife plants had been attacked by weevils, their leaves were brown and riddled with holes and their flowering stalks were absent or substantially reduced.

Because the character of the two parcels is so different, their natural histories are described separately.

Parson's Brook Section (17 acres)

Along Cardinal Way there are three places where the conservation area bumps out and meets the edge of the road, but probably the nicest and easiest way to explore this part of the property is to take the small, unmarked trail that begins at the north end of the property near the intersection with Burt's Pit Road. Not far behind the stormwater detention pond, the trail leads through a slice of the older oak forest and down the bank to the edge of Parson's Brook. From there, the trail follows the brook downstream, running almost half a mile before looping back to Cardinal Way through a section of young forest.

Along this entire stretch, Parson's Brook is beautiful--clear and meandering, with moss-covered banks and a bottom of sand and rock. Over the last ten thousand years, the brook has carved down through the overtopping sands, through the narrow layers of glacial lake clay and into the rocky till below. In one short stretch, you can see the remnants of an old dam (just off the conservation area and on the other side of the brook), which was built here long ago because of an exposure of bedrock, in this case, the tilted

beds of 200 million year old red sandstone. This is one of only five places in Northampton that has an exposure of late Jurassic-aged sandstone, and the only one in a conservation area.

Several hundred feet further, a shaded hemlock border gives way and the brook flows into a beaver pond that was abandoned this year. Although most of the wetland is on the abutting property, it is an excellent place to watch for wildlife, especially from the trail, which after crossing a small, seepy marsh (lousy with multiflora rose), climbs to the top of a hill. This is a perfect place to sit and observe the goings-on in the marsh.

Leaving the beaver pond, the trail continues along the edge of the ridge, through a mix of hemlock and forest. The trail forks and you can take an old bridge across to the homes on Winterberry Lane or loop back to the road. This section crosses the sandier, more acidic soils that were left behind after the gravel operations, and the flora reflects land use history, soil conditions, and hydrology. The forest is younger and dominated by oak and aspen. Old drainage channels cut through the young forest and Asiatic bittersweet is common here. More detailed descriptions of the plant communities in this portion of the conservation area follow (see Vegetation Map):

A seep, rife with vegetation.

1. *Forest Edge Near Stormwater Detention* Basin (Near Cardinal Way/ Burt's Pit Road): This narrow strip includes a mix of black cherry, white pine, oak, red maple, and chestnut, with an understory of staghorn sumac, autumn olive, multiflora rose, Asiatic bittersweet, bracken fern, goldenrod and Queen Anne's lace. Along Burt's Pit is a

small area with basswood, sugar maple and Canada yew; all species that document the influence of the richer soils that developed on the silts and clay deposits left by Glacial Lake Hitchcock.

2. *Brook at culvert crossing:* Lined with speckled alder, with some multiflora rose and Morrow's honeysuckle creeping in. Coltsfoot along banks. The brook itself contains riprap, as well as *Phragmites*, burreed, cattails.

3. *Sunnier Margins of Brook:* Cinnamon fern, fringed loosestrife, Joe Pye weed, boneset, hayscented fern, alder, enchanter's nightshade, lots of grape and multiflora rose, as well as Asiatic bittersweet, glossy buckthorn, and purple loosestrife.

4. *Forested Margins of Brook:* Hemlock, tupelo, red maple, winterberry, New York fern, hayscented fern, bracken, royal fern, wild azalea, mountain laurel, and many other species (lady fern, wild oats, sensitive fern, and cinnamon fern).

5. *Seeps (multiple) Along Brook:* Red maple, ironwood, witch hazel, sugar maple, elderberry, wild raisin, with a rich herb flora, including false nettle, wood horsetail, marsh marigold, cinnamon fern, sensitive fern, halberd-leaved

tearthumb, fringed loosestrife, dodder, wild geranium, turtlehead, grasses, and a diversity of sedges. Garlic mustard is present in some of the seeps.

6. *Beaver Pond Edge:* Red maple, alder, mountain laurel, LOTS of multiflora rose, ironwood, silky dogwood, winterberry, Japanese barberry, Morrow's honeysuckle and a very rich and diverse herb layer (arrow-leaved tearthumb, several sedges, marsh horsetail, touch-me-not, scouring rush, cinnamon fern, reed canary grass.) Occasional sugar maple.

7. *Below beaver dam:* Asiatic bittersweet, purple loosestrife, autumn olive, followed by a hemlock ravine.

8. *Older oak/white pine forest:* A mix of oaks (white, scarlet, red, black), white pine, red maple, gray birch, shagbark hickory, hemlock, black cherry, with witch hazel, maple-leaved viburnum, American hazelnut, mountain laurel, chokecherry, low-bush blueberries (*Vaccinium pallidum*, *V. angustifolium)* and occasional sheep laurel in the shrubby understory. The acidic soils below have few plants. Where present, they support starflower, partridgeberry, pipsissewa, wintergreen, woodland aster, Canada mayflower, fringed polygala, bracken fern, Lycopodium, and Pennsylvania sedge. One small patch along the road supports sugar maple, basswood and some Canada yew.

The western 10 acres in 1986, with gravel operations in full swing. Note the beginnings of the ponds. *Aerial photo, courtesy of Northampton DPW.*

9. *Young forest behind houses in area of historic alteration and re-claimed old gravel pits: A* mix of big-toothed aspen, black birch, ash, abundant Asiatic bittersweet and Morrow's honeysuckle.

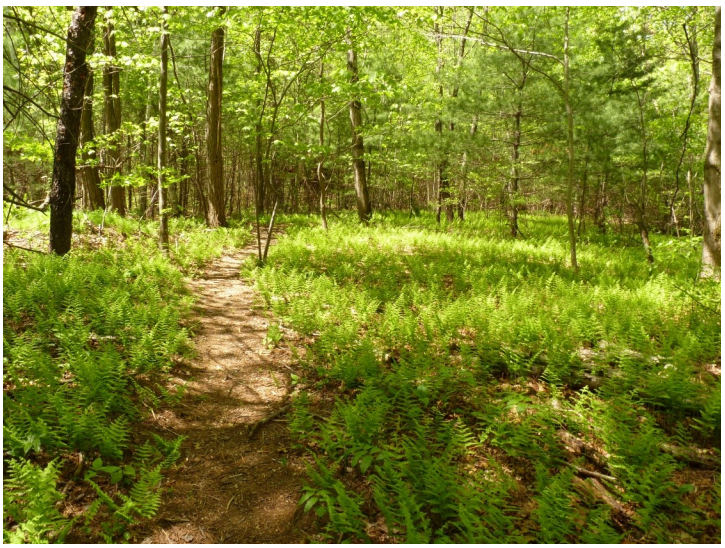
West of Cardinal Way (10 acres)

This area is a mix of early successional habitats (old fields, young forest) with some wetland areas and open water. The ponds were excavated decades ago and are fed by groundwater. During periods of high water, these areas drain into Parson's Brook, passing under Cardinal Way and through an open ditch. All of this area is underlain by glacial outwash and although groundwater is not far below the surface, the soils are acidic, droughty and nutrient poor.

Given its disturbance history, it is no surprise that this part of the conservation area has the greatest amount of invasive plants. Autumn olive forms a border along most of the edges and is widely scattered in this part of the property. Other common invasives include glossy buckthorn, multiflora rose, bittersweet and garlic mustard.

1. *Open water & adjacent wetlands:* This pond is ringed with Phragmites and speckled alder, but many other species are also present, including white pine, red maple, gray birch, staghorn sumac, silky dogwood, willow,

and multiflora rose, Asiatic bittersweet). The largest pond had a nesting pair of Canada geese and functions as a vernal pool.



2. *Open Field:* The field is transitioning to scrub, so that although there are lots of grasses and herbs, there are also lots of young cottonwood. Raspberry, black locust, quaking aspen, glossy buckthorn, autumn olive, and multiflora rose are creeping in and around the forested edges.

3. *Young Forest:* This former hayfield was manipulated during the era of gravel operations, but just how it was used is unclear. There are some large earthen berms, which may be the scraped off topsoil from other nearby gravel operations. A small trail cuts through this area and connects to the network of larger ATV trails that extend all the way to Willard's Gravel operation, nearly a mile away. Since it was abandoned, this part of the property has grown into a young forest mostly consisting of white pine, with lesser amounts of gray birch, black locust and cottonwood. Garlic mustard is common in places, while other herbaceous plants include wild strawberry, Christmas fern, dewberry, enchanter's nightshade and many others.

4. *Red Maple Forest:* Adjacent to the large open pond/marsh that lies beyond the conservation area's northern

boundary, this part of the property has developed into a very pretty, mostly open red maple forest. Black cherry is also common in the canopy, while the understory includes winterberry in the shrub layer and an abundance of ferns (royal, sensitive, lady, cinnamon, New York, hayscented, and interrupted.) Canada mayflower is also common, as is dewberry, false solomon's seal, red trillium, and several others. Since the beavers returned and built a dam, the soils here have become wetter than they have been since beavers were hunted out of the area in the 1700s.

Wildlife

This property supports a wide variety of animals, both resident species as well as those that just pass through, like migratory birds. In addition, the area along Parson's Brook falls within MA NHESP's "priority habitat for a rare species." For wildlife, the brook and its forested corridor are the jeweled necklace of the property. During my field visits, I saw crayfish, fish, turtles, frogs, muskrats, evidence of otters, beavers, more than three dozen birds, including pileated woodpeckers, belted kingfishers, red-tailed hawks, and much more.

The other section of the conservation area, although compromised by its history of alteration, also has wildlife value. The ponds function as vernal pools and the upland areas provide supporting habitat for species that depend on sandier, open sites, such as prairie warblers. It is possible that box turtles also use this area. They are a species in decline and have been found in the vicinity. Furthermore, the abutting property to the west has sand blowouts and patches of pitch pine. It probably supports some unusual insects (i.e. native bees, moths).

Recommendations

1. <u>Organize field walks.</u> Although four signs along Cardinal Way read "Parson's Brook Conservation Area," the trails are poorly marked and it appears that most of the conservation area is little used. A series of field walks to

introduce the local neighborhood to the beauty and diversity of this conservation area would be worth-while.

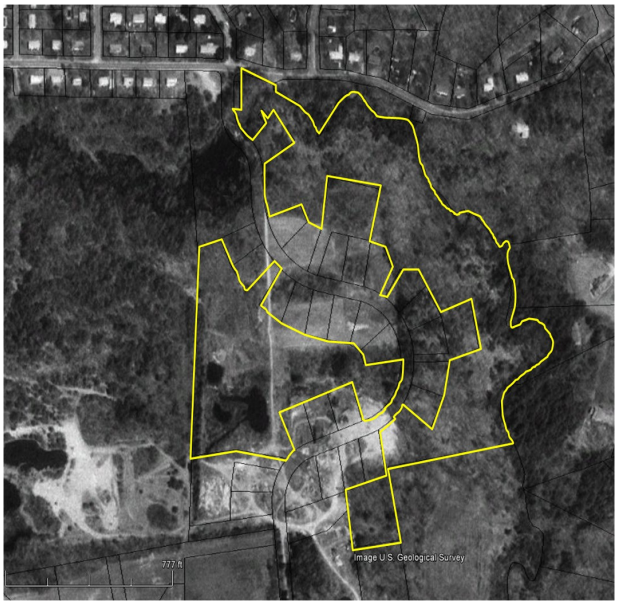
2. Control invasive plants. The most important place to focus is along Parson's Brook, where multiflora rose is currently the worst problem. Autumn olive should be controlled in the 10-acre portion, and if time and funding permit, other non-native plants should be controlled as well.

3. Monitor for stilt grass. This highly-invasive grass was found in 2014 downriver along the brook, just over the Easthampton line.

Purple loosestrife foliage ravaged by biocontrol beetles. This plant is so stressed that it will not flower.

4. Improve and/or create trails to promote more use of conservation area.

5. Restore Sand Barren/Pitch Pine: An intriguing possibility to investigate is the possibility of managing the 10-acre portion of the property with a controlled burn and trying to restore it to a sand-plain/pitch pine barren.



The land in 1995, showing the ponds and the regraded and revegetated former gravel pits., with the boundaries of the two conservation parcels overlaid on top. *Courtesy Google Earth.*

Support for this report was provided through Northampton's Community Preservation Fund.

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