Connecticut River Greenway: An Overview

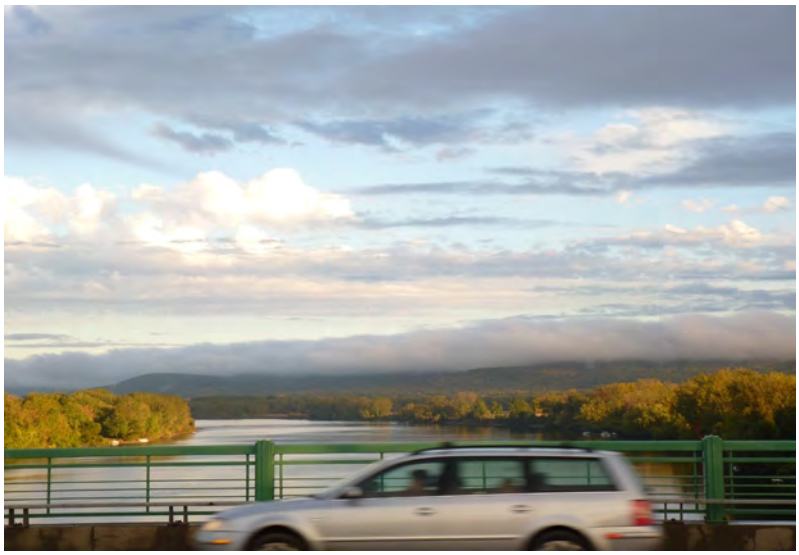
Prepared by Laurie Sanders, M.S
December 2014

Connecticut River Greenway Overview

With nearly nine miles of shoreline along the river and roughly 3,000 acres of floodplain, the Connecticut River and its meadows comprise one of the most important landscapes in Northampton. Economically, agriculturally, culturally, aesthetically, and ecologically, they have helped to shape and define Northampton's history and earned it the moniker "Meadow City." And yet most Northampton residents are unfamiliar with this landscape. The Connecticut River is seen only when crossing the Calvin Coolidge Bridge and the vast, open meadows are essentially unknown, blocked by flood control dikes and hidden from view by buildings and Route 91.

This 2013 image shows the land protected in the Meadows, with different owners shown in different colors. New acquisitions in from late 2013 and during 2014 are not included.

For the last forty years, a variety of agencies, departments and organizations have been working to gain better access and protect the special landscapes that characterize this part of Northampton. So far, their combined efforts have protected about 1,300 acres—just over a third of this 3,000 acre expanse (Table 1), with the City of Northampton protecting roughly 300 acres as conservation land. Collectively, these properties are part of an important migratory corridor along the Connecticut River, provide habitat to more than a dozen rare species, encompass some of the



Most people see the Connecticut River and Meadows only from the Calvin Coolidge Bridge or Route 91.

best examples in the state of floodplain forest (*Figure 1*), and also protect several habitats that are otherwise rare or unusual within Northampton's borders (e.g. beach, dry-riverside bluff, wet meadows, vernal pools, even a natural, cobble-strewn shoreline along the Connecticut River).

The future of these special natural areas, however, is jeopardized by the rapid spread of certain invasive plants. Among the most worrisome and widespread are Asiatic bittersweet, Japanese knotweed and garlic mustard, but several others--privet, winged euonymus, morrow's honeysuckle, multiflora rose, swallowwort, Canada thistle and wintercreeper—are gaining ground. Furthermore, this year's discovery of the highly invasive tree known as Amur corkwood in several places in the Connecticut River greenway is

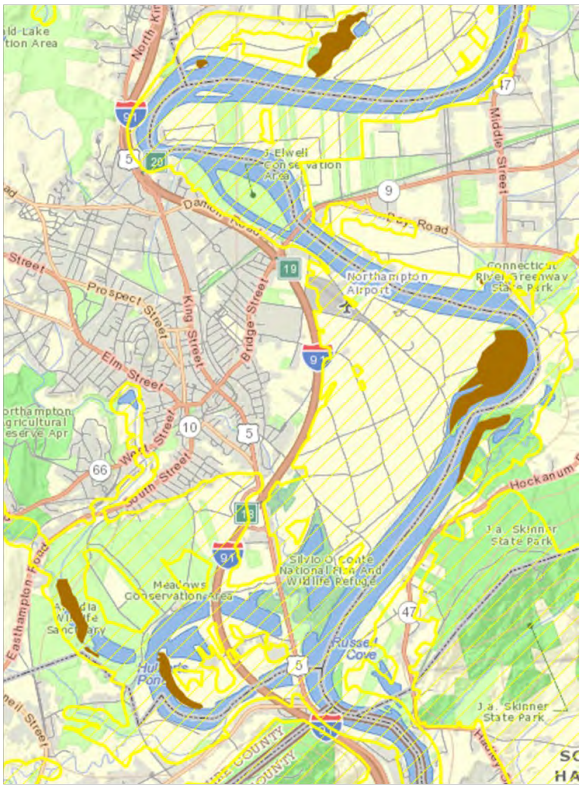


Figure 1. This image, which shows priority habitats for rare species in yellow and exemplary natural communities in brown, underscores the ecological importance of the Meadows and Connecticut River.

Table 1: Land Protection within the Connecticut River Floodplain in Northampton.		
East Meadows (east of Route 5)	**Owner of Protected Open Space**	
	City of Northampton-Conservation	191
	City of Northampton-Recreation	23.5
	US Fish & Wildlife Service (Conte Refuge)	154
	MA Division of Fisheries & Wildlife	44
	MA Department of Conservation & Recreation	5.5
	Private Conservation Restrictions (no public access)	18
West Meadows (west of Route 5)	**Owner of Protected Open Space**	**Acreage**
	City of Northampton-Conservation	111
	Massachusetts Audubon	575
	US Fish & Wildlife Service (Conte Refuge)	14.4
	Private Conservation Restrictions (no public access)	27.5
TOTAL ACREAGE		**1,340**

alarming. Two sycamore maples were also found on the former Lyman Estate; this species is displacing native plants in the eastern part of the state.

In thinking about the management of invasive plants, the only good news along the Connecticut River Greenway is that their distribution is still patchy in many areas. Furthermore, certain areas stand out as warranting greater stewardship due to their ecological significance. The management challenges, however, loom large. None of these plants can be killed with a single application of herbicide and many of them are in difficult-to-reach places. Further complicating the effort is that much of the nearby land—and especially the Route 91 corridor--is also loaded with invasives, which means an on-going supply of new seeds.

If the City intends to try to maintain the ecological integrity of some of these special habitats, it will need to take an active stewardship role and work collaboratively with other departments (recreation, DPW), agencies and organizations (i.e. Massachusetts Audubon, US Fish & Wildlife Service, MassHighway, MA Department of Agricultural Resources, MA Division of Fisheries and Wildlife, and local friends groups). For instance, MA DFW is already working on controlling invasive plants at their Rainbow Beach properties and a cooperative venture to control the invasives on the city-owned portion of the beach makes sense.

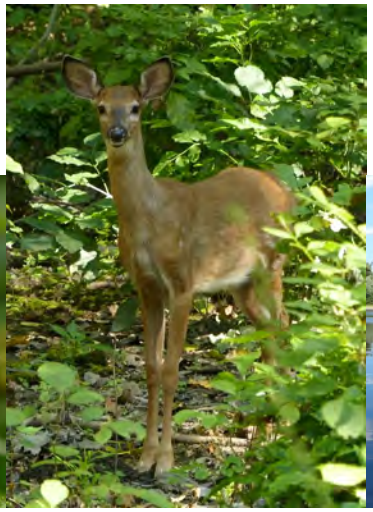
This report was made possible with support from Northampton's Community Preservation Fund.

Top: Although less common along the Connecticut River than the Mill River greenway Japanese knotweed is spreading along the margins of fields and roads and also within the floodplain forest.

Middle & Bottom: Asiatic bittersweet is a prolific fruit producer and has taken off in the floodplain. Its woody vines can grow more than 8 inches in diameter. This one is "medium-sized" compared to some others.

The Natural History of the Brickyard

Prepared by Laurie Sanders, M.S
December 2014

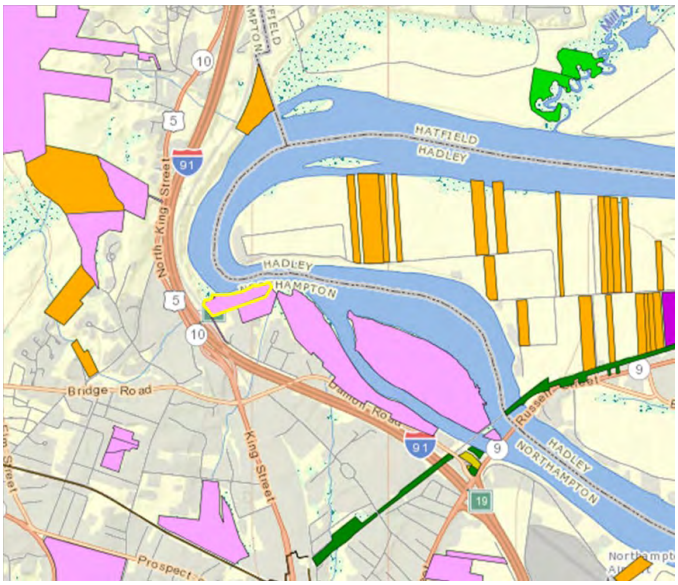


Brickyard Conservation Area

Brickyard Conservation Area

Overview

Acquired in 2013, this five-acre conservation area is highly altered and compromised, but nevertheless is interesting and beautiful. Its historical uses include decades as a brickyard, hence the recommendation for a new name. As a conservation area, it currently supports several habitats, including a pretty cove of floodplain forest, the final reach of Pine Brook, a dry, wooded bluff with great views of the Connecticut River, and about 1,000 feet of cobble-strewn shoreline. The property is part of a longer corridor of protected land, and connects to six acres managed by the City's Recreation Department, which are contiguous with 37-acres within the Elwell Conservation Area.



The 5-acre conservation area, highlighted in yellow, shown in context to the Connecticut River, Route 91, and other protected land. All properties in pink are owned by the City of Northampton, while orange parcels are held as private conservation restrictions or APRs. The bright green along the Hatfield Mill River is owned by MA DFW and the darker green is the Norwottuck Bike Trail, which is managed by DCR.

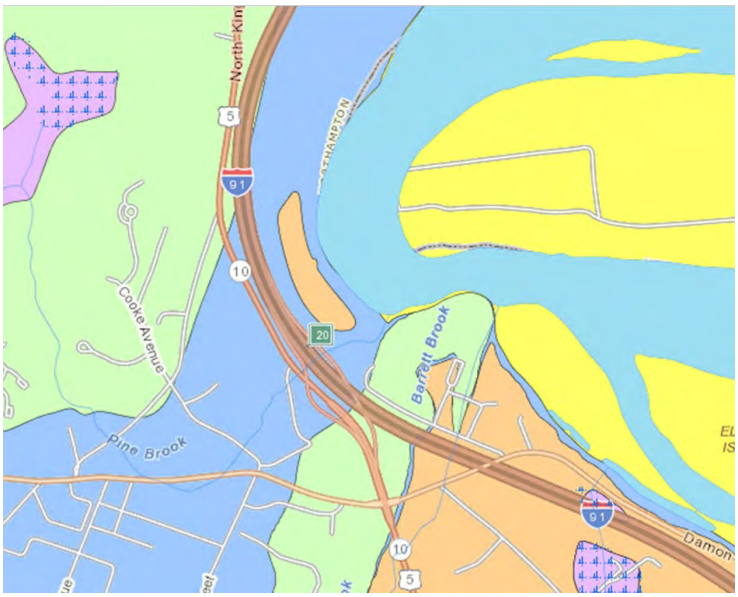
Geology

Twelve thousand years ago, this conservation area was part of a large, developing sandy delta on the margin of glacial Lake Hitchcock. The glacially-swollen waters of Hatfield's Mill River provided the source of sand, which dropped out of suspension as the river entered the glacial lake. Over time, the sands accumulated and extended out over the varved clays that had been laid down during the era of Glacial Lake Hitchcock. Those clay layers, meanwhile, had been deposited on top of the unsorted, unconsolidated till deposits, which covered the deeper bedrock.

During the 10,000 years since the glacial lake drained, the Connecticut River has migrated back and forth across the former lake bed, carving away at the sand delta and clay layers, and exposing the once-buried

till deposits along the shoreline. In the process, the river created the high, steep bluff that characterizes this reach of the river.

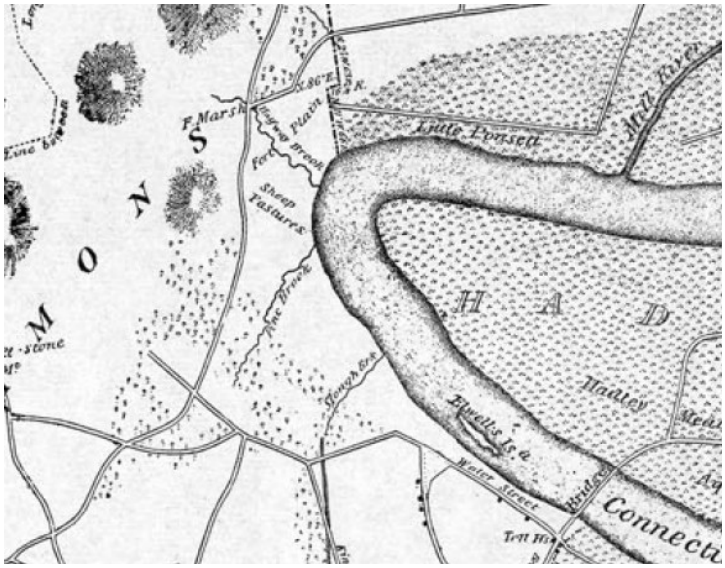
But what's curious about this stretch of the Connecticut River is that it includes one of the river's sharpest bends. After heading almost due west, the river takes an abrupt turn to the south. Why? Probably because hard, metamorphic bedrock is buried just below the layer of till. As the river bumps against the erosion resistant rock, its energy is deflected and its path shifts from due west to due south, and from that point, the river meanders east over the old lake bed.



An image from MA GIS showing the surficial geology, more or less, or the conservation area and vicinity. Areas in bright yellow and lavender are recent alluvium or swamp deposits, while the remaining colors represent deposits immediately after the last glaciation. Light green represents thin till deposits (this is the ridge line), the orange indicates the remains of the glacial delta created by the Mill River in Hatfield, and the light blue, the clay deposits from the Glacial Lake. The delta deposits actually extend further to the north, and many of these sands were excavated during the construction of Route 91. *From MA GIS.*

Human Use

It is impossible to know exactly how the Nonotuck used this area, but based on information in Trumbull's *History of Northampton,* a Nonotuck fort was built in this vicinity during the 1670s around the time of King Phillip's War (Trumbull, vol. 1, p 245). How they used this area before then is conjecture, but it's easy to imagine the high sandy bluffs in this stretch being used as a campsite and lookout. Perched high above the floodplain, the site would have had fewer mosquitoes and better breezes than the meadows below. What's more, it would

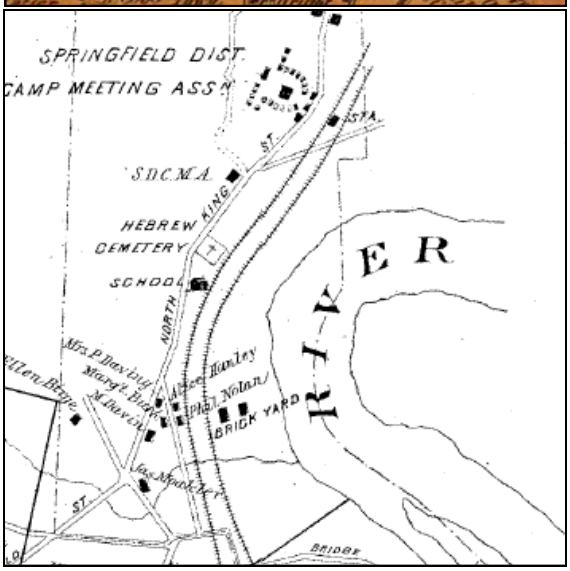


The 1831 map refers to the upland delta as Fort Plain, a nod to its history as an Indian fort, probably built in the 1670s during the time of King Phillip's War. Meanwhile, the land in the vicinity of the conservation area as Sheep Pastures, a name that also dates back to the 17th century.

have been nearly level (the top of the delta), freshwater would have been available from the nearby streams (Slough Brook, Pine Brook and Halfway Brook) and access to the Connecticut River and their crops would have been easy. And no other place in Northampton would have offered such an excellent lookout, up and downriver and across the extensive meadows of Hadley, Hatfield and Northampton.

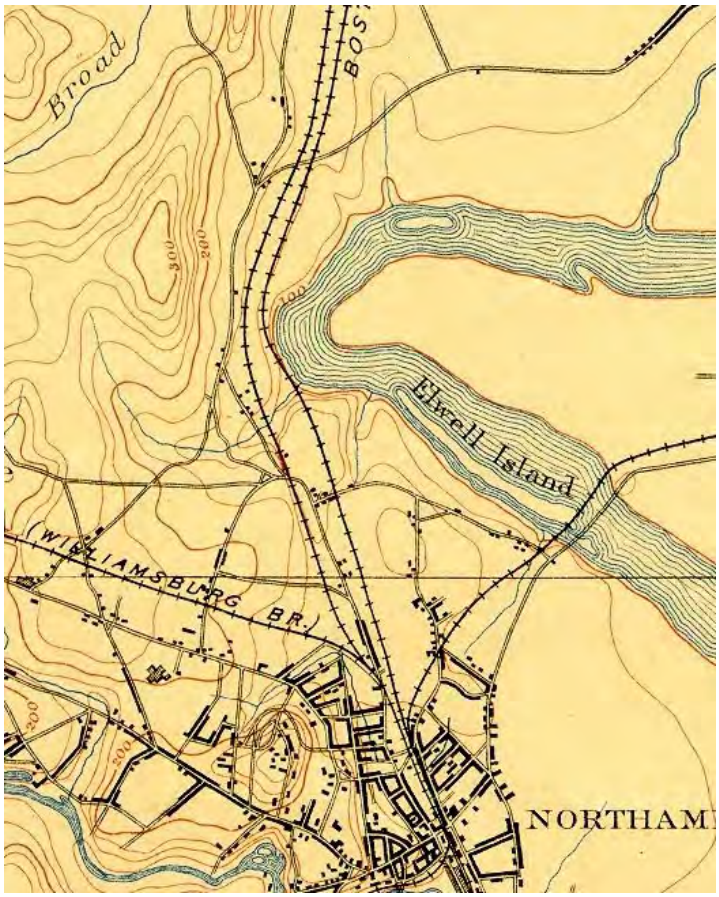
The English settlers use of this area probably began before King Phillip's War, but was much more intense after 1676 and Phillip's death. In 1698, Northampton's early residents set aside several parcels of common land, including this area, for "free feeding of sheep." The first parcel identified for this purpose was "north of the Slow [Slough?] bridge to Hatfield bounds" and included "all that Land between the road Wch Leads to Hatfield and the great River" (Trumbull, 1898). How long the area was used as a sheep pasture is not known, but as late as 1831, the local place name "Sheep Pasture" was still used to describe this section of town.

But by the time the 1831 map was published, a series of changes were underway. Back in 1822, the early success of the Erie Canal triggered canal fever throughout the eastern United States and in our area, a series of investors proposed linking Northampton to New Haven via a canal. That year a committee, including the engineer from the Erie Canal, identified Slough Brook, which borders the adjacent recreation property, as the terminus for the future Northampton-New Haven canal. The work on the canal began in Connecticut in 1825, but construction of the Massachusetts portion didn't begin until the 1830s. When the canal was finally completed, a series of four locks within Slough Brook connected the Connecticut River to the rest of the canal. A towpath ran alongside the canal and it is likely that at least part of the recreation area and the former Lane Construction Company site were used to shift cargo back and forth from ferries on the Connecticut to flat boats on the canal.



The 1854 map by Barker *(above)* shows a Brickyard (*BYd*) in the area. By 1895, the map (*below*) shows two brickyard buildings just north of the conservation land.

The canal operated for just twelve years, and by the time it was officially abandoned in 1847, the first railroad had already been punched through Northampton and tracks had been laid north along what is now the western edge of the conservation area. By 1884 a second rail line, paralleling the first, had also been built.



The 1884 topographic map shows the two railroad lines heading north and crossing Pine Brook.

Around the same time as the canal's construction, a brickyard was established in the vicinity and during the next seventy years, a series of brickyards (Howe's, Smith's, Gleason's) operated here. And as a brickyard, the area was ideal—it had thick deposits of clay, abundant sand to mix in, fresh water, and access to firewood, which was needed for the fires to bake the bricks. When the railroad was built alongside in the 1840s, the brickworks had yet another advantage: not only could the bricks be hauled to distant markets, but coal dust, an additive that helped the bricks bake better, could also easily be delivered. And the final advantage was this: all the imperfect bricks could easily be disposed of—either tossed back into the shallow clay pits, over the bank, or used as fill around the pipes that carried Pine Brook under the railroads. Today thousands of discarded bricks can be found along Pine Brook, near the railroad crossing, and weathering out from the hillside.

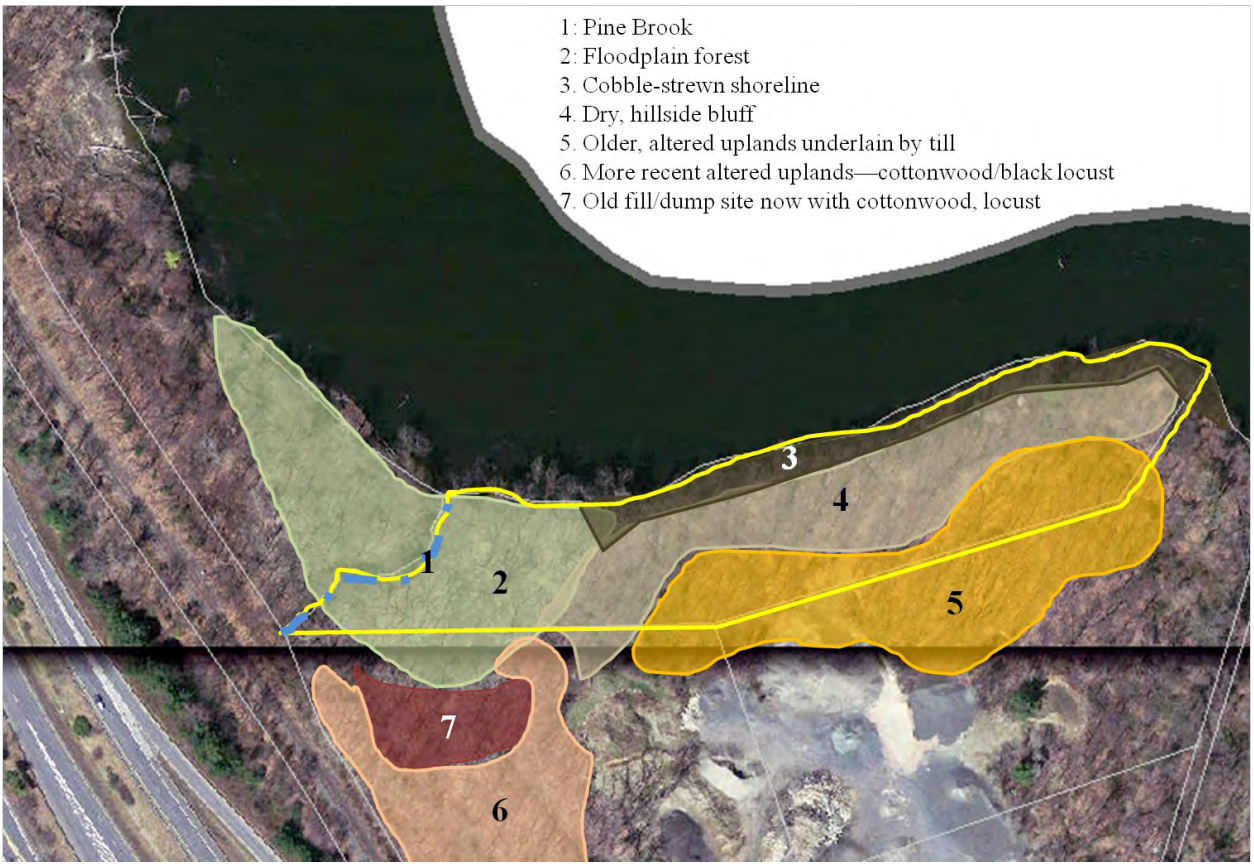
Thousands and thousands of broken and deformed bricks can be found in Pine Brook, along the slopes of the conservation area and along the railroad tracks heading toward the Hatfield line.

Beginning in the late 1950s, this site experienced a new series of alterations. The first of these was just west of the property and was the construction of Route 91, which resulted in another 400-foot stretch of Pine Brook being piped and buried under the highway. During the years of the interstate's construction, the shopping plaza that now includes Big Y and Walmart was developed, which buried another 800 feet of Pine Brook. Then, in 1963, the Lane Construction Company purchased four separate tracts that included all of the land formerly used by the brickyards and extended from Slough Brook to Halfway Brook. During its fifty-year tenure, Lane Construction used the site for making cement and storing sand and gravel.

This aerial image from 1952 sharply contrasts with the bustling activity in 1958, which included the construction of the interstate highway, the building of a new shopping center, and intensive use of the uplands between Slough Brook and Pine Brook. Gravel mining, cement mixing and vehicle storage had replaced the former fields.

In 2013, the City of Northampton negotiated with Lane Construction and for a dollar a piece, purchased two contiguous parcels: a 6-acre parcel, which is now owned by the City's recreation department and includes a new boat access ramp, and a 5-acre parcel, that was protected as conservation land. These acquisitions create a link to 37 acres of conservation land between the Connecticut River and Damon Road, and a new trail over Slough Brook will connect all three properties.

A view of a small part of the Lane Construction Company's operations adjacent to the new city-owned parcels in 2014.



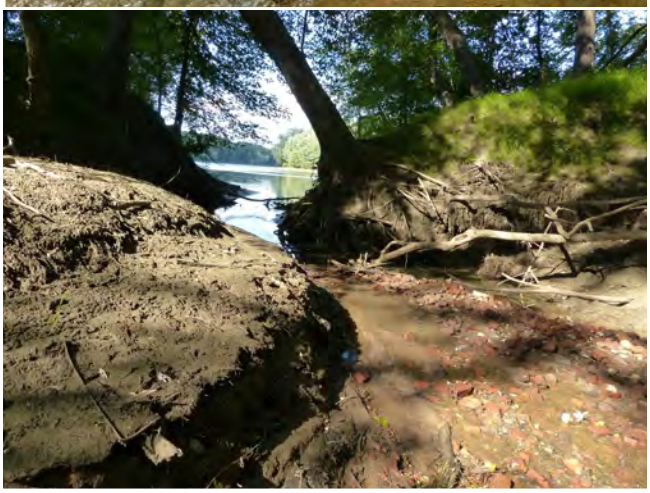
Vegetation Patterns

The property's geologic history, long record of alteration, and location along the Connecticut River have shaped the habitats and vegetation patterns we see today. Generally, the land can be split into five different habitat types: (1) Pine Brook; (2) floodplain forest near Pine Brook; (3) cobble-strewn shoreline along the Connecticut River; (4) dry, riverside bluff; (5) altered, forested uplands adjacent to former Lane stone-and-gravel operations.

1. Pine Brook forms one boundary of the property and runs for approximately 330 feet before entering the Connecticut River. It emerges from a pipe and is surrounded by brick fill. On either side the brook has carved down through the old river silts and has created a deep channel, which in some areas has exposed layers of varved clay. At its mouth, the

stream enters the Connecticut River just below the sharp bend. From the shoreline, there are excellent upstream and downstream views of the river.

2. Floodplain Forest: Dominated by massive cottonwoods and silver maple, this little pocket of floodplain forest is very pretty. In addition to the size of the trees, part of its charm is that it is within a natural, amphitheatre-shaped glade, so that, in spite of the noise of Route 91, it feels isolated and almost pristine. The forest floor is a mix of Virginia creeper, poison ivy, ostrich fern, sensitive fern, clear weed, jumpseed, false nettle, and spotted touch-me-not. Asiatic bittersweet, garlic mustard and Norway maple are present here and so too is Japanese knotweed. All of these invasive species are still at relatively low-levels, particularly compared to the highly altered woodlands above, which are loaded with invasives.



Varved clays can be found along the margin of Pine Brook, which is seen flowing out into the Connecticut River. Its channel is still strewn with broken bricks.

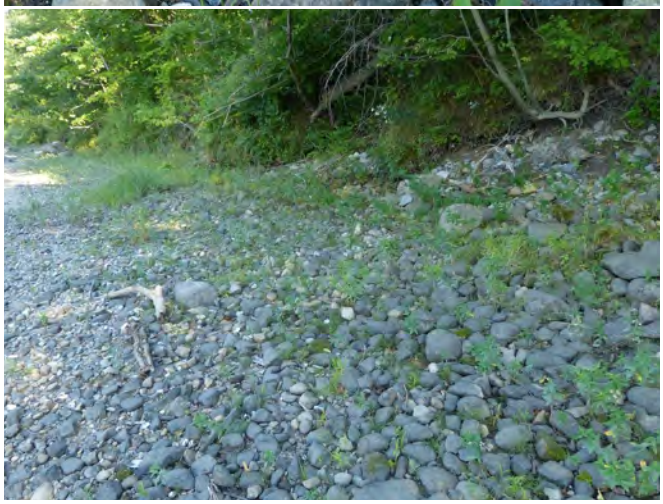
3. Cobble-Strewn Shoreline: Within this conservation area and extending about ½ a mile upriver, a rocky layer of till has been exposed. This is the only place in Northampton with this type of shoreline, and in fact it's one of the few places like this anywhere along the Massachusetts section of the Connecticut River. Very few plants grow here, but one that does is Indian hemp. The shoreline is covered

Ostrich fern dominates the understory of the floodplain forest.

with the shells of Eastern Elliptio, the most common freshwater mussel in the Connecticut River. A future summer survey for the state-listed cobblestone tiger beetles is warranted along this shoreline. At present, this endangered beetle is known from only a single site in Franklin County.

4. Dry, Riverside Bluff: This is one of the rarest of the natural community types in Northampton and it is limited to this short reach between the Hatfield border and the mouth of Slough Brook. During the last 50 years, a lot of it has been damaged by sand and gravel mining. In addition, this habitat is now threatened by the spread of invasive plants. What distinguishes this natural community are the dry, sandy, somewhat alkaline soils that often lead to open, park-like conditions. The list of species is fairly high, with trees, shrubs, wildflowers and grasses. Woody species include red oaks, sugar maple, elm, basswood, birches, red maple, ironwood, speckled alder and chokecherry. Scattered in this area are non-native autumn olive and common buckthorn, as well as Asiatic bittersweet and Morrow's honeysuckle. The herb layer contains a mix of grasses and wildflowers (hog peanut, woodland sunflowers, wild sarsaparilla, etc).

Altered Uplands (5, 6, 7): This includes places where the land was recently dis-



Top: The cobble-strewn shoreline of the conservation area is obvious in this photo that was taken a little further upriver. The cobbles are exposed glacial till. This is the only place on the Connecticut River in Northampton with this type of shoreline.

Middle: Along the shoreline are thousands of empty shells from the freshwater mussel known as the Eastern elliptio.

Bottom: The small cobble shoreline may provide habitat for the state-listed Cobblestone Tiger Beetle (Endangered).

turbed, as well as areas that were modified long ago and have since revegetated, growing back over the decades into a mix of red oak, shagbark hickory, red maple, hop hornbeam, black cherry, bitternut, and black birch. In more recently disturbed sites (e.g. just off the conservation land on the Lane property), the canopy is dominated by black locust and big-toothed aspen, while the understory includes patches of sedges (*Carex pensylvanica* mostly), wild rye, ground nut, wild sarsaparilla, wild agrimony, Virginia creeper, an interesting trefoil, and various asters and goldenrods. Poison ivy is fairly common, and the shrub layer includes maple-leaved viburnum, silky dogwood, panicled dogwood, hazelnut, and false honeysuckle (*Diervilla lonicera*)—a native species. As elsewhere on this property, Asiatic bittersweet is present, and so are autumn olive and privet.

Recommendations

(1) Name this the Brickyard Conservation Area;

(2) Build a trail from the parking area, along the ridge, down into the floodplain forest and ending at the edge of

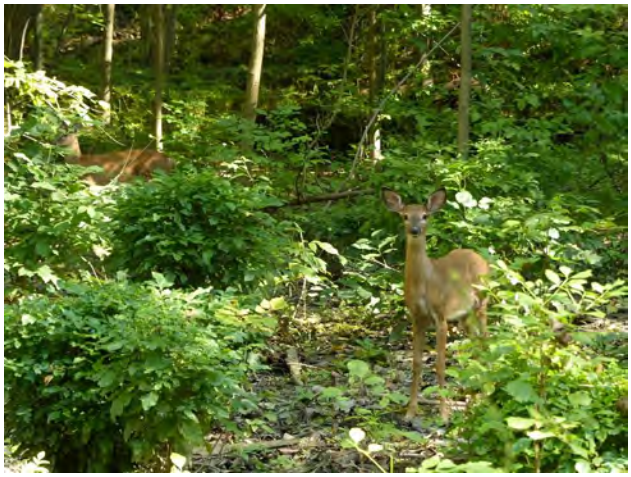
Three different areas of disturbed forest. *Top image* shows a level area that has not been disturbed in a long time; *Middle image* shows the edge of the dump at the crest of the slope, with an abundance of Asiatic bittersweet; B*ottom image* shows the vegetation along the dry, high hillside that abuts the recreation land and was altered intermittently during the last 50 years.

Pine Brook and the Connecticut River. Visitors could return either by walking back along the shoreline to the boat access or on the same trail. It would be nice to create an open vista from the ridge with the help of some judicious tree trimming.

(3) Prepare a complete inventory of the plants;

(4) Control the invasive plants, which are currently at manageable levels within the conservation area, but less so beyond its borders. On the old fill and along the Lane entry road, invasive plants are widespread, abundant and include many of the most problematic, difficult-to-eradicate species: privet, Asiatic bittersweet, Japanese knotweed, Morrow's honeysuckle, autumn olive, multiflora rose, purple loosestrife, common buckthorn, and garlic mustard. Any control effort should be coordinated with the Recreation Department, and if possible, it would also be helpful to work with a group of volunteers (rowing club, kayakers, friends group, etc) on management activities over the long-term.

Common buckthorn, Rhamnus cathartica, is still not very common in Northampton, but occurs with some frequency in this conservation area and along Route 5. It is a non-native shrub and one of the invasive plants that should be controlled at this site.



This site is heavily browsed and regularly visited by white-tailed deer, a species whose population has increased dramatically in Northampton during the last twenty years. Two deer can be seen in this photograph.

Sources

Trumbull, James Russell. 1898. History of Northampton. Vol. 1.

This report was made possible with funding from the Community Preservation Act.

Photographs © Laurie Sanders

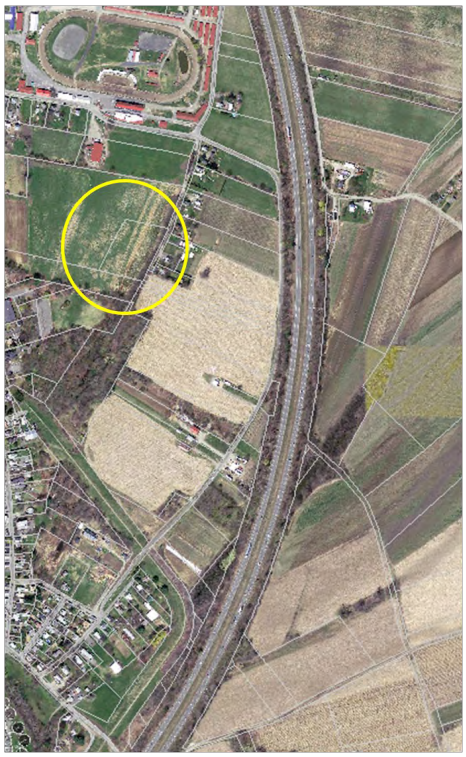
Cross Path Road-Kossakowski Section (2.92 acres)

Prepared by Laurie Sanders, MS
December 2014

This small field near the fairgrounds is currently maintained as part of a larger hayfield and includes a mix of grasses, clover, daisy fleabane, madder, dock, and tall buttercup. During the last fifty years a wooded border has grown up along a drainage ditch that carries water from the area of the fairgrounds and down into the swale behind the new, unnamed six-acre conservation area off Pomeroy Terrace.

The property, highlighted in yellow, and its relationship to interstate 91, the fairgrounds, neighborhoods and other city-owned land (blue, yellow, orange) and private conservation land (light red).

Silver maple is the most common tree growing along the ditch, but other trees include slippery elm, pin oak, catalpa and less commonly basswood. Silky dogwood is the most abundant (and it is abundant!) woody plant in the shrub layer. Other frequently encountered shrubs are common



The property in 1952, before Interstate 91, was part of the 100-year floodplain and surrounded by open fields. Today, sixty plus years later, it is still mostly farmland, but a row of trees have been allowed to grow up along the drainage ditch.

buckthorn, multiflora rose, high-bush cranberry, northern arrowwood and staghorn sumac. The autumn olive is present, but low in numbers. Vines are also abundant along this border, with Virginia creeper, Asiatic bittersweet, poison ivy, grape and wintercreeper (!) occurring in order of abundance. Within the herb layer, common cinquefoil, sensitive fern, fringed loosestrife, and ground nut are the most often encountered.

Recommendations

This property has limited ecological value to wildlife and the wooded border, and although it provides a visual screen for the homes along Cross Path Road, it does not play any significant ecological function. Its handful of invasive species (common buckthorn, multiflora rose, autumn olive, Asiatic bittersweet and wintercreeper) are present and could be controlled, but it's hard to know who would take on the task. There are many other areas in town that are more ecologically deserving of attention than this one.

With this in mind, the City has several options:

(1) continue to rent the land for hay and/other crops;

(2) partner with GrowFood Northampton, MCCC, or another group and use the property as an other location for community gardens (which would be convenient to residents of downtown);

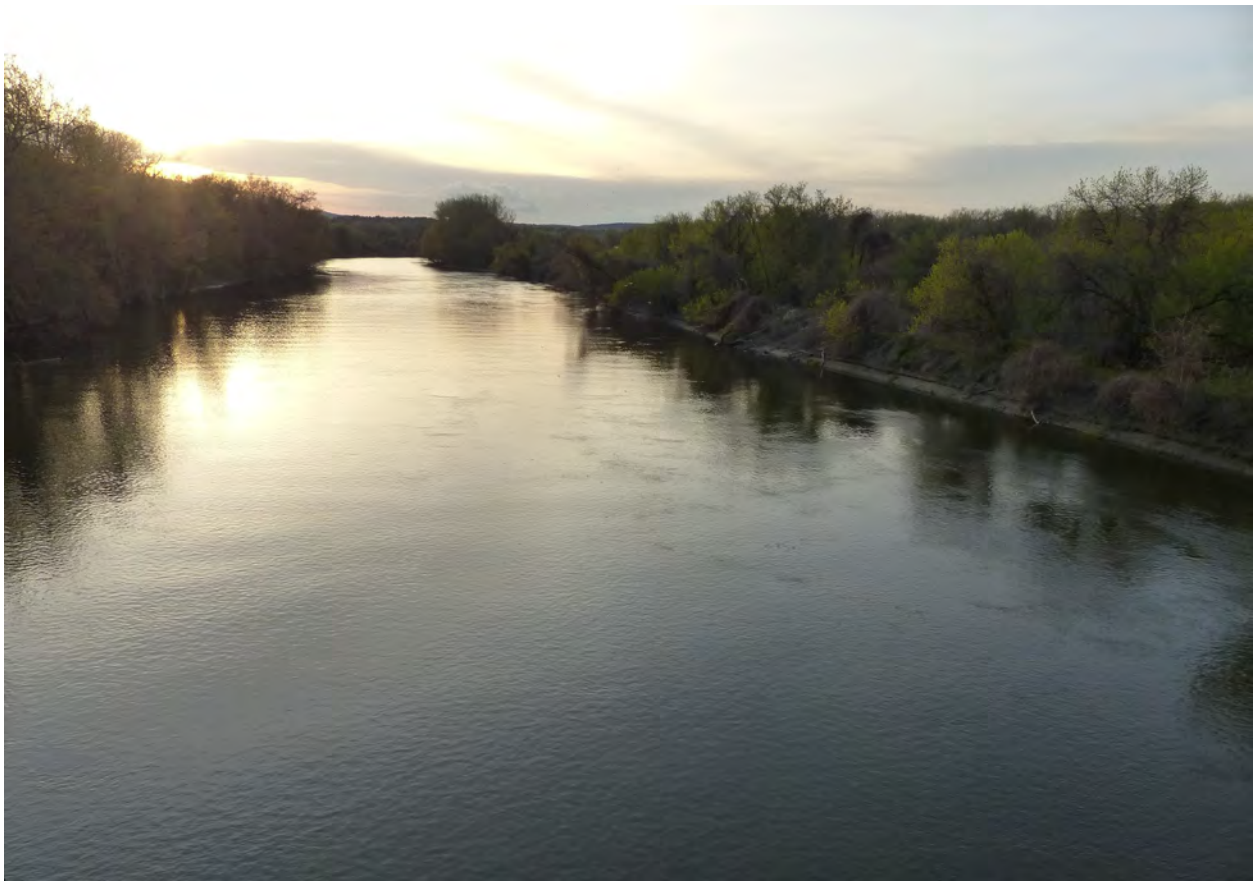
(3) transfer the land to the recreation department to use for a future recreation field, or

(4) sell the land with a conservation restriction/APR to a local farmer.

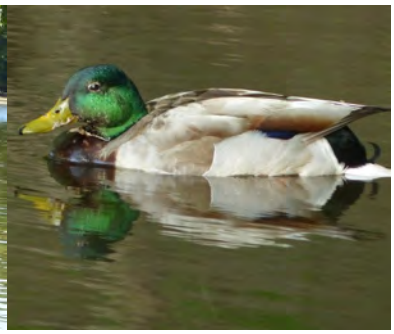
Silver maple, *Acer saccharinum.*

This report was made possible with support from Northampton's Community Preservation Fund.

A Natural History of the Elwell Section



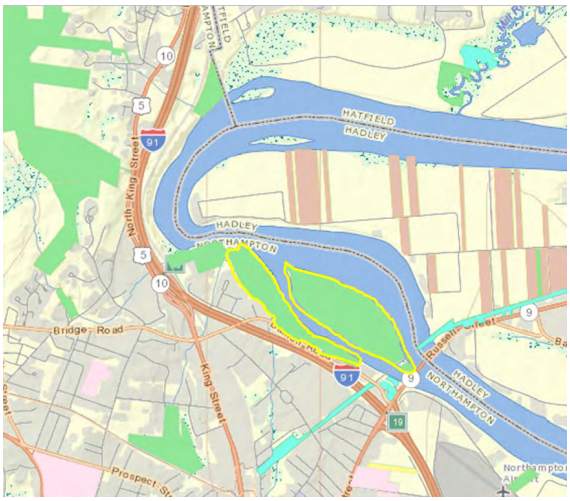
Prepared by Laurie Sanders, M.S.
December 2014



Elwell Conservation Area

ELWELL CONSERVATION AREA

The Elwell Conservation Area includes two separate parcels: Elwell Island (87 acres), which is accessible only by boat, and a narrow, 37-acre band between Damon Road and the river, that extends from Slough Brook to near the Norwottuck Rail Trail. The two parcels lie just south of two new (2013) city properties—one offering boat access to the river and a second small conservation area. A new trail over Slough Brook will soon connect the recreation area to the mainland portion of the Elwell Conservation Area and provide the first land-based public access since the land was acquired in 1981.Considered together, these two properties include more than 2 1/2 miles of shoreline and all of the land is within Priority Habitat for Rare Wildlife.



The Elwell Conservation Area, outlined in yellow, in context with other conservation land (green), recreation lands (teal blue), APR properties (orange) and other publicly-owned land (pink).

Changes Since 1993

Since my first assessment of the Elwell Conservation Area in 1993, several changes have taken place on

Although no farming activities have occurred on Elwell Island for decades, about 25% of the conservation land along Damon Road is devoted to agriculture. As of 2014, about 8 acres (*Photo A*) were under cultivation for annual crops and another two acres were being hayed. In 2015, another acre plus will be available as community gardens. This area is at the northern end of the property (*Photo B*) and was cleared of brush and young trees toward the end of the 2014 growing season.

the two parcels, some minor, some major. The agricultural field, for instance, is now being farmed organically and an overgrown area at the north end of the mainland has just been cleared to create more farmland and/or community garden space. Several blight-resistant American elms have been planted on the island (some more successfully than others) and the conservation area is being studied by The Nature Conservancy as part of two separate research projects—one studying the impacts of Asiatic bittersweet on tree health and a second project that is part of a larger watershed-based study correlating river flooding with vegetation pattern.

(A) Of the elms that were planted on Elwell Island, a few, like this one, have died and/or are being overwhelmed by non-native plants. (B) Preliminary results from The Nature Conservancy study have revealed that a tree that has both native grape and non-native Asiatic bittersweet clambering up its trunk is more likely to die younger than a tree with just grape vines or just Asiatic bittersweet vines. Why? Because the vines cause more branches to break, opening the pathway for fungus, diseases and other pathogens to enter the tree and cause its premature demise.

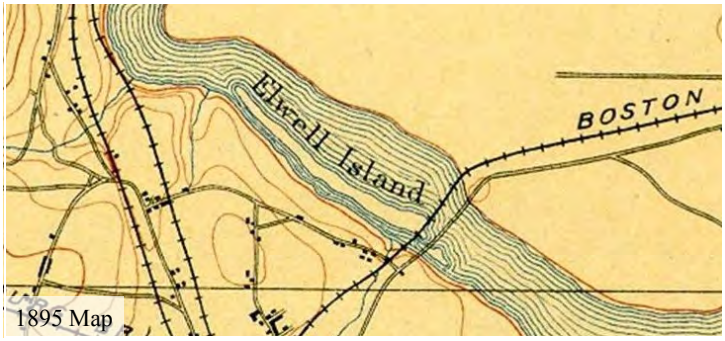
Another "change" since 1993 is that the island has stopped growing (*See photos*). Prior to then, the island's expansion had been documented with every new map and aerial image since 1831. In contrast, during the last twenty years, its shape and size has remained almost identical.

These images from Google Earth show Elwell Island in 1995 and 2014, revealing that the overall dimensions of the island are similar and that the vegetation patterns are remarkably similar as well.

1831 Map

1854 Map

1884 Map



1895 Map

1939 & 1940 Maps

The Appearance and Expansion of Elwell Island

Named after its first owner, Elwell Island first began forming in the early 1800s. The local lore is that its creation was aided by its first owner, Levi Elwell, who purportedly planted young willows to stabilize a newly developed sandbar. Whether true or not, the fact is that the island did not exist when the first map of Northampton was prepared in 1794. By 1831, however, the city's first real map documented an island of about five (or so) acres. During the next 150 years the island continued growing. Its growth, at least early on, was probably fostered less by Levi and more by the extensive amount of amount of sediments eroding off the slopes from excessive timber cutting and land clearing. Undoubtedly, changes in the river's flow because of the building of the bridge across the Connecticut River in 1808 and dams also affected the island's growth.

These changes, however, can all be put in the "minor" category when compared to the dramatic change in the quantity of invasive plants growing on both the island and mainland.

(A) A tree along the Connecticut River, engulfed in Asiatic bittersweet, and (B) an impressive Asiatic bittersweet vine on the mainland portion.

Back in 1993, I found only four non-native plant species growing here: purple loosestrife, garlic mustard, Japanese knotweed, and Asiatic bittersweet, and none of them were widespread or abundant. Purple loosestrife, for instance, was confined to just one area of the island, garlic mustard was in a single section on the mainland, and Japanese knotweed was found in just two spots—at the north end of the island and behind the houses along Damon Road. Asiatic bittersweet, the worst invasive plant at that time, received only four mentions, including a comment that there was "some problem with Asiatic bittersweet." Today, paddle up the channel between the mainland and the island and you will see cascading curtains of bittersweet, stretching from the tops of the trees down to the ground. In the floodplain forest, big and small bittersweet vines twist up the trunks and many of the light gaps are covered with tangles of young vines. Earlier this year, when forester Mike Mauri surveyed the property for the City, he estimated that the number of bittersweet seeds in the mainland portion was two million per acre.

A female Amur corktree in fruit on Elwell Island.

If these four species were the only ones that had taken off, there would be a problem, but the situation is actually

much worse because more than a dozen other problematic invasives have become established and many of them have also taken off. These include Morrow's honeysuckle, privet, autumn olive, multiflora rose, yellow iris, tree-of-heaven, swallowwort, Dame's rocket, moneywort, *Phragmites*, Canada thistle, catalpa, Japanese barberry, Norway maple and Amur corktree. Although their distribution is still patchy, their rampant growth threatens the long-term health of the property's floodplain forest habitat, one of the rarest habitat types in the Commonwealth. Additionally, the continued spread of invasive plants could negatively affect the property's butternut stands, which according to forester Mike Mauri, are two of the most impressive he has seen. If only for these reasons, the control of invasive plants should be a top priority within the Elwell Conservation Area.

Butternut, *Juglans cinerea,* in fruit. This species is in serious decline because of the arrival of two non-native pathogens.

What follows are more detailed vegetation descriptions of the conservation area and a list of management recommendations.

The park-like floodplain forest along Damon Road, with touch-me-not and tangled bittersweet vines under a canopy of silver maple and a partially flooded swale in the background.

April 29, 2002 August 18, 2003

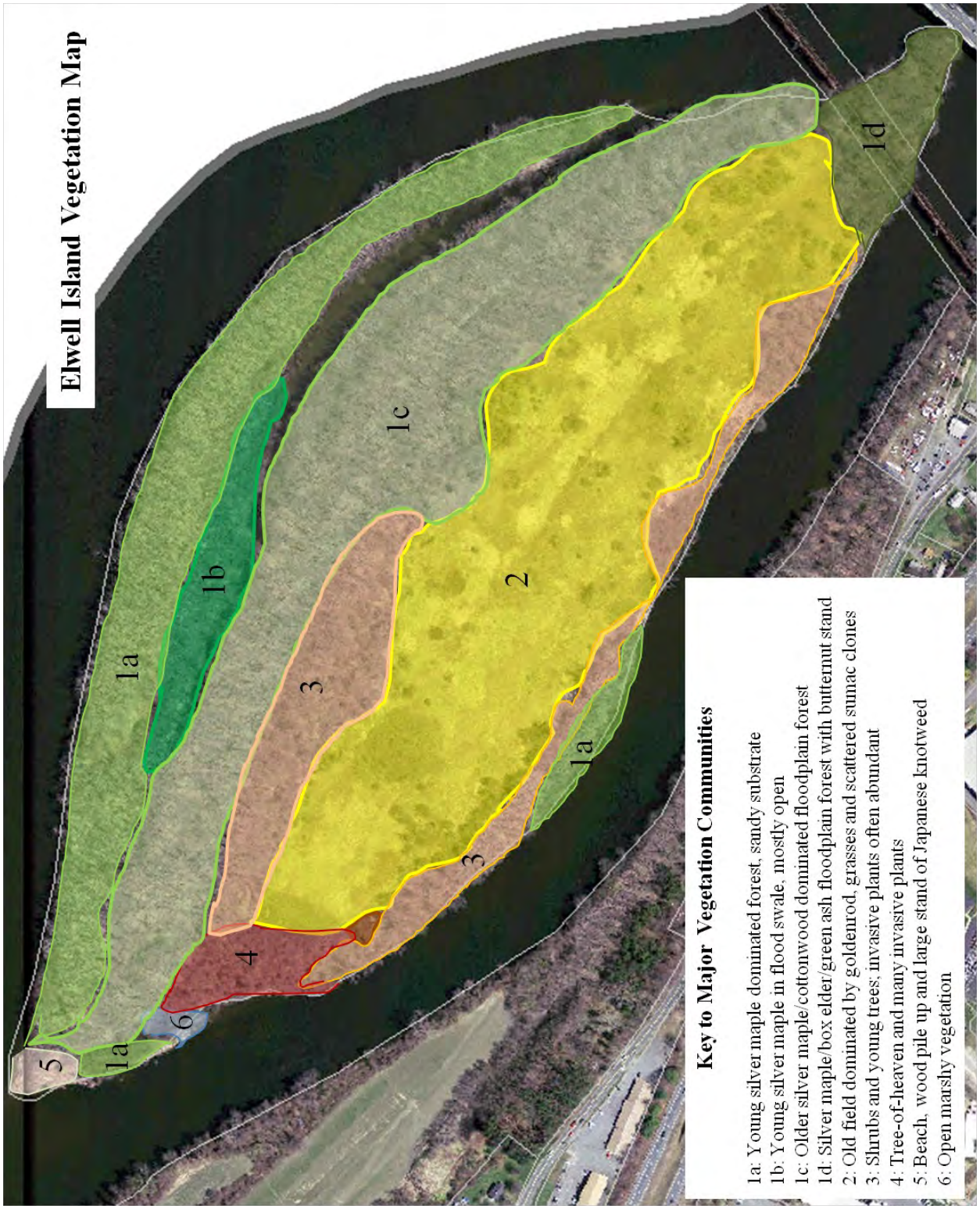
Elwell Island and the land along Damon Road are annually affected by flooding, with large areas of the island and fields completely inundated. In contrast, during dry spells, the Connecticut River is low and large beaches are exposed along the island's northern, upriver end.

Elwell Island

During the last twenty years the ratio between the forest, meadow, mudflat and beach habitats on the island has not changed much. The meadow is continuing to grow in, both along the edges and as the sumac clusters expand in size. The size of the beach and mudflats vary depending on the river's height, shrinking or expanding as the level rises and falls.

Forested Land

The amount of forest covering the island is now about 50 acres, with about 40 acres of high quality floodplain forest and the remainder being scruffier, second growth forest on higher ground. The second growth forest is on the margins of the meadow and along the Northampton side of the island and it is where *all* of the problematic woody species are located, including tree-of-heaven, morrow's honeysuckle, privet, catalpa, autumn olive, mulberry, multiflora rose, Japanese bar-


Elwell Island Vegetation Map
1a
1b
1c
1d
2
3
4
5
6
Key to Major Vegetation Communities
1a: Young silver maple dominated forest, sandy substrate
1b: Young silver maple in flood swale, mostly open
1c: Older silver maple/cottonwood dominated floodplain forest
1d: Silver maple/box elder/green ash floodplain forest with butternut stand
2: Old field dominated by goldenrod, grasses and scattered sumac clones
3: Shrubs and young trees; invasive plants often abundant
4: Tree-of-heaven and many invasive plants
5: Beach, wood pile up and large stand of Japanese knotweed
6: Open marshy vegetation

berry (rare), euonymus, Norway maple and amur corktree. It is, however, where the butternut is coming in too. None of the non-native woody species are terribly common (yet), but they have all arrived and based on their habits elsewhere, they will increase in abundance unless they are controlled.

In contrast to the messy feel of the secondary forest, the floodplain forest is open and park-like, with a tall canopy, virtually no shrub layer and an understory carpet of ferns and herbs. The highest quality floodplain forest is located on the side of the island closest to Hadley. This is the oldest section and includes monster cottonwoods over three feet in diameter, huge, multi-stemmed silver maples and occasional black willow. Below is a lush, ever-changing carpet of herbs, with ostrich fern in the siltier soils and wood nettle in the sandier deposits. In the wetter low spots, there are smaller patches of false nettle, sensitive fern, touch-me-not (*Impatiens capensis; I. pallida*), clearweed, jumpseed, Virginia creeper, poison ivy and white cutgrass (*Leersia virginica).* Woody debris piles are common and grape vines stretch into the canopy. There are also lots of young Asiatic bittersweet vines; gill-over-the-ground and moneywort are found in this area too.

A carpet of stinging nettle grows below the canopy of silver maple. The presence of stinging nettle reveals that the soils are sandier (versus silty and loamy).

A variety of views of the floodplain forest and its changing character and qualities.

More views of Elwell Island and its different habitats:
(A) A mix of invasives grow at the base of a large tree-of-heaven; (B) Box elder, a type of maple is common at the downstream end of the island; (C) The shrubby margin as seen from the channel between Damon Road and the island; (D) The view through the flood-plain forest in late afternoon. (E) Another swale that is periodically flooded, now thick with rice-cut grass and other annuals; (F) The massive pile of branches and trunks at the island's upstream end.

In the northern portion of the island, the floodplain forest is younger, but is similar in composition, with cottonwoods, silver maple, black willow and because of the sandier soils, swaths of wood nettle and white cutgrass. Widely scattered in this area are young Asiatic bittersweet vines.

Near the Rail Trail bridge is a third “type” of floodplain forest. Here, the canopy is dominated by a mix of box elder and silver maple and the ground below is an almost solid stand of ostrich fern. When Mike

This image from the 1950s, before the interstate, shows the island with much less vegetation. It is also narrower than it is today.

Mauri explored the area in April 2014, he estimated about 80,000 ostrich fern clumps/ acre in this area.

A view to the north across the meadow, with the yellow-glow of flowering goldenrod in the distance.

<u>The Meadow</u>

The open meadow covers 30 acres of the island and is a half mile long and about 600 feet wide. For more than a century, from the 1830's through the early 1950's, this section was managed by the Elwell family as a cow pasture and hay fields. Since then, farming

has been abandoned and the only changes have come from annual flooding and occasional fires, with the last burn consuming about 8 acres in the fall of 1992.

Two views of the meadow in March; above, with flattened goldenrod, and below, one of the large, expanding clones of staghorn sumac.

Although dominated by goldenrod (*Solidago canadensis*), the meadow also includes swaths of ostrich fern (near the rail trail), patches of open grass, and mixed in with the goldenrod, a variety of wildflowers, including touch-me-not, false nettle, pokeweed, stinging nettle, common milkweed, dame's rocket, garlic mustard, poison ivy, and several others. By mid-summer, the meadow vegetation is taller than an adult and so thick that it is almost impossible to get through.

Within the meadow are expanding patches of staghorn sumac and not far from the rail trail, the planted disease-resistant elms and a grove of butternut. These trees look healthy (so far), but aside from the threat of butternut canker, what's growing in and around them is a worry. Not only is there Asiatic bittersweet, but there is also swallowwort (argh!) growing underneath and galloping across the open meadow. Swallowwort, true to its common name, forms dense monocultures, has no natural pests or pathogens, and will "swallow up" and displace the native plants—and even outcompete some of the other non-natives! It is found in about a dozen places in Northampton (so far), and is an important one to control.

<u>The Mudflats</u>

Mudflats are found in only two inlets: one long and narrow on the north side (~ 3 acres), and the other,

much smaller, along the southwest shore. These inlets provide the sheltered, calm-water conditions necessary for fine silts and clays to settle out and the mudflats to develop.

During the growing season, these exposed muds are ringed,with mud plantains, false pimpernel, monkey flower, rice cut grass and clammy hedge hyssop (*Gratiola neglecta; G.aurea*), beggarticks (*Bidens cernua; B. tripartita; B. vulgata*), *Eleocharis*, and *Scirpus*. Purple loosestrife and about a dozen bunches of yellow iris also grow here.

Point Bars

At both the ends of the island are sandy beaches (technically point bars), with the largest and most heavily used being at the island's north end. Fortunately people have not been leaving much debris behind or damaging the area. In fact, what is a lot more worrisome is the expanding patch of Japanese knotweed growing at this northern end. The most common plants found here are willow, stands of young cottonwood and silver maple, plus hundreds of cocklebur and grasses.

The beach at the upstream end of the island is scoured each year by ice and floodwaters. It is a popular destination in the summer for kayakers and boaters. Meanwhile, a thick stand of Japanese knotweed has begun growing along one edge.

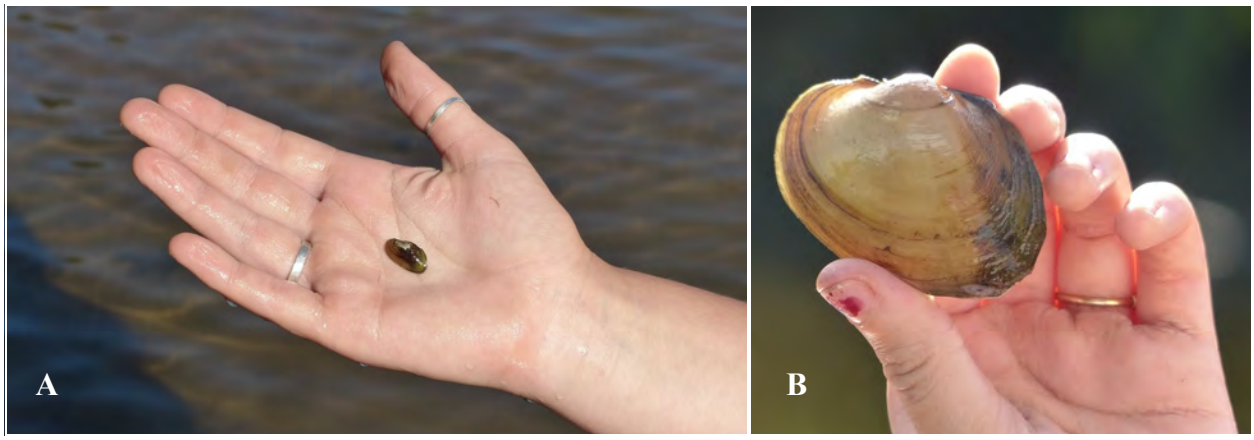
Wildlife

Although the entire island usually floods each year, sometimes for weeks at a time, wildlife is able to either recolonize—or move back and forth between the mainland, either swimming or crossing the ice. Among the mammals found here are woodchucks, red fox, deer, coyote, mink, raccoon, muskrat, and beaver.

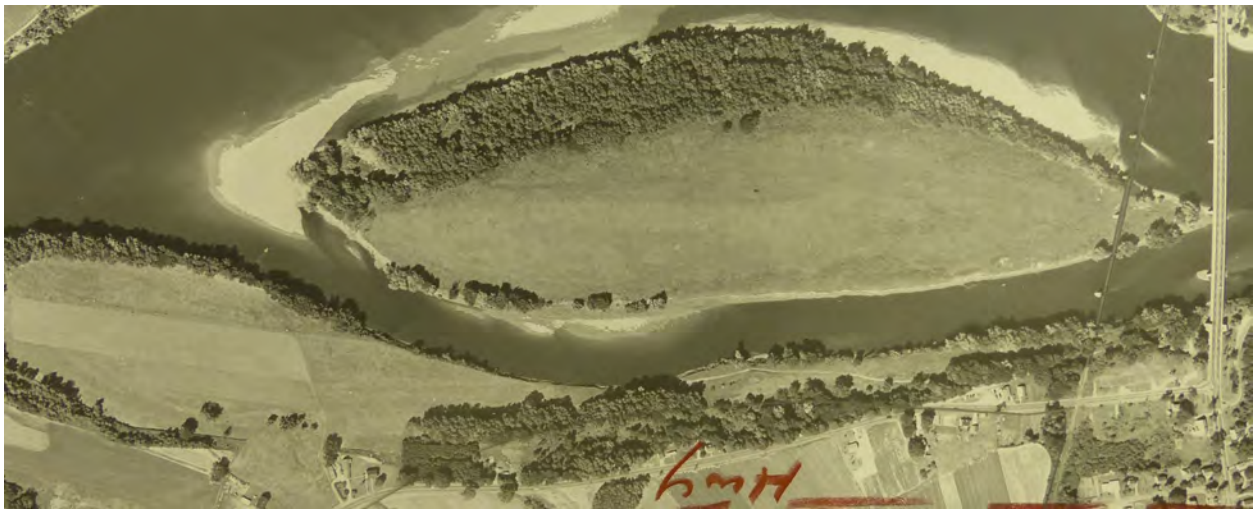
Red-winged blackbirds, gray catbirds, song sparrows, yellowthroats and red-tailed hawks are a few of the birds that nest on the island, and dozens of other bird species can be seen feeding and roosting on the island as they migrate along the Connecticut River corridor in the spring and fall.

Pickerel frogs, green frogs and American toads can also be found here.

It's easy to find evidence of beavers on Elwell Island, and raccoon prints are also common.



(A) The channel between Elwell Island and the conservation land along Damon Road is a beautiful place to paddle. It's also a great place to look for freshwater mussels. The shallow sands here appear to act as a nursery ground for young eastern Elliptio mussels, which is the most common species in our area. (B) If you're lucky, you may also find other species, including yellow-lampmussels, *Lampsilis cariosa*, which is one of the most imperiled species of freshwater mussel in Massachusetts.



The Mainland

In the 1950s the mainland portion of this conservation area was almost entirely open and treeless, with big farm fields and a cart path running through a smaller clearing. Back then, the only trees were growing around a deep, regularly flooded swale, along the river's edge, or had been intentionally planted as part of a small red pine and spruce plantation. Today, only about a third of the property (12 acres) is open farmland and with the exception of a small, open marsh, the rest is wooded. But the wooded areas are hardly uniform and can be divided into seven zones based on composition:

<u>Red Pine and Spruce Plantations</u>

Between the MA DCR office and behind the few houses on Damon Road are planted stands of spruce (*Picea* sp.) and red pine (*Pinus resinosa*). Now part of the conservation land, these evergreen stands

A small red pine stand and a small plantation of now-dying spruce grow on the slopes along Damon Road. A thick understory of ferns carpet this area, which is now increasingly a mix of hardwoods, including black cherry and butternut. There are also some impressive Asiatic bittersweet vines growing here.

Elwell Conservation Area
Mainland Vegetation Map
Key to Major Vegetation Communities
1: Old spruce and red pine plantations, now with mixed hardwoods
2: Silver maple floodplain forest
3: Open marsh
4a: Clearing from people, with path leading to dock
4b: Wet swale with phragmites & Japanese knotweed
5: Butternut & sugar maple forest
6a: Brushy edge, highly invaded
6b: Hedgerow between fields and periodically cut
1
2
2
3
4a
4b
5
6a
6b

have gone unmanaged for many years and their understories are now a mass of poison ivy, touch-me-not, sensitive fern, lady fern, evergreen woodfern, ostrich fern, Virginia creeper, garlic mustard and big clumps of Asiatic bittersweet (including some whopper 3" diameter vines). Between the two stands and growing below, there are several large butternuts , plus elm, black cherry and some ash. A city storm drain empties out in this area and is a major source of water in the swale.

A large butternut grows in a clearing between the two plantations of spruce and red pine.

Floodplain Forest Along Damon Road

Dominated by silver maple, the floodplain forest is open and park-like. The understory shifts between open mud flats and broad expanses of sensitive fern. Jack-in-the-pulpit is common here and there are a few small patches of Japanese knotweed near the riverbank. Asiatic bittersweet can also be found along the bank and is spotty in the forest.

This culvert (A) drains both groundwater and storm runoff from the land on the west side of Damon Road and empties into this long swale (B).

Open Marsh

A mix of grasses, cattails, touch-me-not, tearthumb and other common wetland plants occurs behind the MA DCR building. This area also has purple loosestrife.

Images from in and around the clearing behind the private homes on Damon Road, including a picture of my dog near a massive bittersweet vine and the nearby wet swale that has grown in with Phragmites and Japanese knotweed. A small patch of knotweed was growing in this same area in 1993.

Disturbed Area/Clearing

Behind one of the houses on Damon Road is a small clearing that leads to the river, where there is part of an old dock that's tied into the bank. Old junk and other debris have been left and/or dumped here. There are also some very big bittersweet vines.

Nearby is a seepy swale with skunk cabbage and a large patch of Japanese knotweed and a small patch of Phragmites.

Butternut/Sugar Maple Forest

Moving downriver, the forest changes and becomes dominated by butternut, with increasing

amounts of sugar maple along the drier slopes. According to Mike Mauri, this is one of the highest concentrations of butternut that he has seen, with the largest individual having a 35” diameter. These are mostly healthy, although some are suffering from butternut canker and/or a secondary root rot pathogen. This area also has several non-native shrubs (privet, Morrow’s honeysuckle, euonymus, Japanese bar-

(A) A heavily-diseased butternut grows in a clearing, with winged euonymus nearby and silver maple in the background. (B) The sugar maple glade near the south end of the parcel.

berry, multiflora rose) as well as garlic mustard. Near the river’s edge, grape and Asiatic bittersweet are both abundant.

Forest Along Connecticut River & Hedgerow

Between the agricultural fields and the river is a narrow wooded strip that includes a shifting mix of silver maple, cottonwood, box elder, staghorn elm, cottonwood, butternut, smooth sumac and staghorn sumac. There are curtains of grape and Asiatic bittersweet, as well as goldenrod, raspberry, yellow touch-me-not, evening primrose and at least three kinds of smartweeds growing along the border. In the forest, the understory vegetation is patchy. Some areas are open and easy to walk through, with a mix of grasses, ostrich fern, poison ivy, white snakeroot , and Virginia creeper, but other areas have become thick with

(A) A view upriver, with a narrow mudflat with overarching silver maples. (B) Another female Amur Corktree, with fruit, growing along the river's edge that borders the hayfield. (C) A muddier stretch of shoreline, looking downriver toward Elwell Island; (D) The hayfield, looking north. (E) An open patch dominated by Virginia creeper and growing below the narrow border of silver maple between the Connecticut River and the hayfield. (F) Box elder bugs on box elder seeds.

Asiatic bittersweet, privet, Morrow's honeysuckle, multiflora rose, burdock and other unwelcome invaders. A single, female Amur Corktree with fruit was found growing along this strip as well.

Between the two fields, a narrow hedgerow includes a mix of native and non-native species. Of the non-natives in this stretch, the most worrisome are the autumn olive, Canada thistle and Asiatic bittersweet.

The end of Slough Brook, once the terminus of the New Haven-Northampton Canal and now the drainage for the water from the Barrett Street Marsh.

Recommendations

1. Control invasives.
2. Organize trash clean-ups for the island and improve policing to prevent damage to the conservation area.
3. Consider removing red pine and spruce plantations.
4. Follow Mike Mauri's suggestion about limiting the trails to avoid sensitive areas.
5. Install a kiosk near the future Community Gardens showing changes to the area and describing its human and natural histories.
6. Lead field walks here to showcase this interesting property.

A spectacular view of the Summit House from the clearing that will soon become a community garden.

According to MA NHESP, seven state-listed plants and nine state-listed animals have been found in or near the Elwell Conservation Area.

Sources

Mauri, Mike. Stewardship & Management Plans for Elwell Conservation Area. 2014.

This report was made possible through funding from the Community Preservation Act.

A Natural History of the Montview Section

Prepared by Laurie Sanders, M.S.
December 2014

Spotted Touch-Me-Not *(Impatiens capensis)*

Butternut *(Juglans cinerea)*

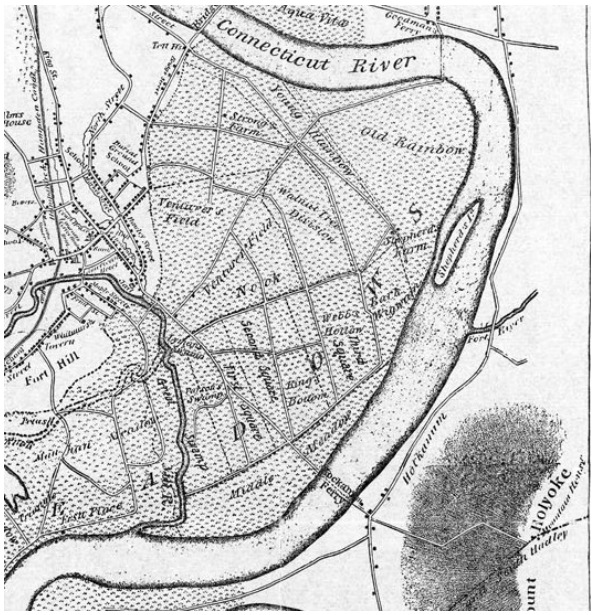
Montview Conservation Area (3.2 acres)

Located near dozens of houses in Ward 3, this three acre property functions as a pocket preserve and park for the local neighborhood. The eastern half includes an informal, ¾ acre recreation field and a small meadow, while the western half includes a shallow wetland surrounded by a semi-open landscape with a network of mowed trails. Here, local residents can take in views of the Holyoke Range ("Montview"), watch birds, and enjoy this small piece of semi-wildness.

The Montview Conservation Area, outlined in yellow, in context with the dike, Interstate 91, the Meadows, downtown Northampton and other land protected. Light orange properties are conservation land, light red are protected through private conservation restrictions.

History

When the first English settlers arrived in Northampton in 1654, this property was probably an open meadow and was being used, either intermittently or permanently, by the Nonotuck for farming. Within a few years, the land between Hawley, Pomeroy Terrace and Williams Street was divided into eight home lots, and this parcel—along with the rest of the Meadows--was divided into lots for agriculture. For the next 300 plus years, the land was used continuously for farming. And for most of those years, it



The 1831 map identifies all of the different parts of the Great Meadows. This conservation area abuts the section called Venturer's Field.

flooded. But after the devastating floods that occurred in 1936 and after the 1938 hurricane, the Army Corps of Engineers built a 5,000 foot long flood control dike that effectively isolated this piece of property from its historic floodplain. After 1941, for the first time in thousands of years, this land was no longer subject to annual flooding by the Connecticut and Mill Rivers. The owners, however, continued to farm the land. When the elderly owner died in the late 1990s, the property was being used to grow corn and hay.

These two photos, 1958 and 2013 show the property in yellow, and the changes in the land—from cleared farmland to a mix of vegetation types—and, of course, the construction of interstate 91. The dike and Venturer's Field Road can be seen in both photos.

In 1998, the heirs had a different plan for the land: a cluster subdivision with forty townhouse condominiums. This was subsequently scaled back to a six-lot, single family house development, which after long conversations with the neighbors and City, was taken off the table completely. In the end, the heirs carved out a one acre lot with the original family home, which they sold to a private buyer, and then donated the remaining 3.2 acres to the City as conservation land.

Since 2000

Soon after assuming ownership, the City worked with the Ward 3 neighborhood and secured a NRCS Wildlife Habitat Incentive Grant, which was used to reseed the cornfield portion of the property with grass. During this same period, the neighborhood converted the southeast corner into a small, informal playing field for the neighborhood kids. A few years later, in 2005, the City leased most of the property to the Montview Neighborhood Farm, a private, organic farming group. For a few years, the farm planted berries and fruit trees and established a vegetable garden in the northeastern corner of the prop-

erty. The western section, however, was not maintained, and over time, woody plants began to creep in around the margins of the wetland and into the former hayfield.

After the property was protected as conservation land, the northern portion began to grow in with brush. Today staghorn sumac towers over the paths and creates some shade.

In 2008, the Montview Neighborhood Farm's lease was up, but modest gardening operations continued, although no farm shares were being sold. By 2012, the relationship between the Montview Neighborhood Farm, the neighbors and the City had deteriorated and the City required the operators to vacate the property. That same year, the Meadows City Conservancy Coalition began working with the City on a management plan for the property. By then a large section in the western part of the property had been overtaken by sumac, and with permission from the Conservation Commission, the neighbors had the area brush-hogged. Some of the sumac stems were already too large to be brush-hogged, which is why today this portion of the property has a network of mowed paths looping through and around clusters of sumac and piles of decomposing brush, circling the wetland and passing through more open areas of goldenrod, touch-me-not and asters.

Local residents, in cooperation with the MCCC, have continued to mow a network of trails through the northern portion of the conservation area. Without their efforts and brush hogging, the land would have grown up into a solid stand of staghorn sumac.

One arm of the trail system connects to the eastern half of the property where the abandoned gardens of the farm have begun growing in. Some of the farm's former plantings (e.g. bee balm, bergamot, comfrey, blackberries, pawpaw, hazelnut) are still holding on, but most of the garden beds have been overwhelmed by a mix of goldenrod, asters, Canada thistle, Indian hemp, and many other wildflower species. This is the best part of the property to explore if you're interested in butterflies, pollinators and other kinds of insects. Plus from here, you can easily access the dike, and walk over to the conservation land off Pomeroy Terrace or take the dirt roads into the Meadows.

Ecology & Vegetation Patterns

Within the context of Northampton's conservation land, this is a very small parcel, and even considered within the context of the Meadows, it's quite small. But from an ecological perspective, it has four things going for it:

The wetland is dominated by reed canary grass, but also includes many other classic wetland species.

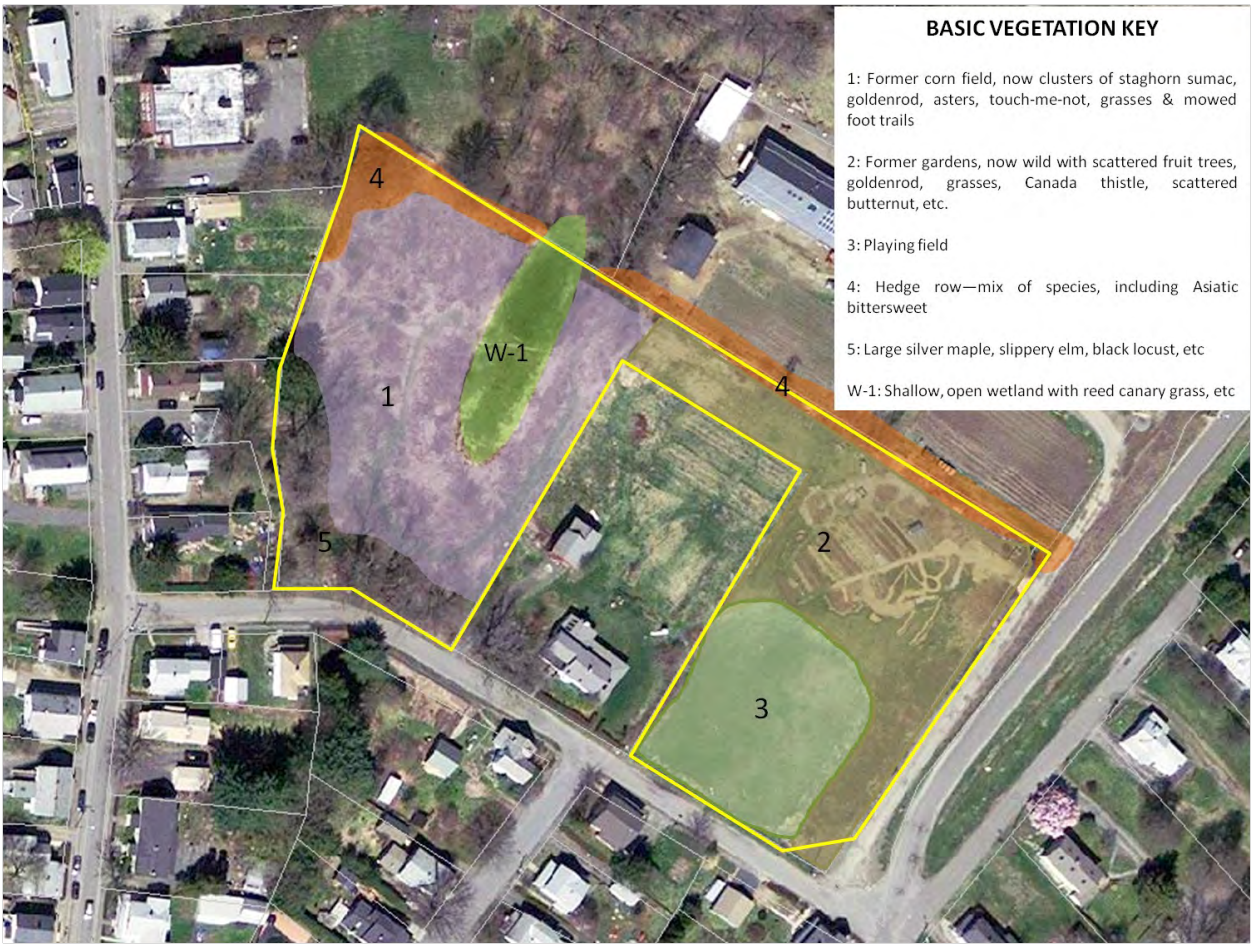
1) It has a wetland that functions as a breeding pool for spring peepers and American toads (among other things);

2) It includes wet meadow habitat, which has become less common in the last 50 years as fallow land has either been cultivated or allowed to grow into forest;

3) It provides wildlife habitat—albeit limited--for migratory and nesting birds, as well as for other some other animals that live in fragmented habitats.

4) It has relatively few invasive species. Asiatic bittersweet, multiflora rose, and a large swath of Canada thistle are the most worrisome at the present time. Because of the MCCC and the active role of the neighbors, the likelihood that the invasive species will be controlled here is higher than most other conservation areas in the City. A very small patch of Japanese knotweed has also established in the southeast corner, and swallowwort was observed just outside the boundaries of the conservation area.

Canada thistle in flower, and later in the season, gone to seed. It will continue to spread and take over the "hayfield" portion of the conservation area (former garden) unless it is controlled.



Detailed Vegetation Descriptions

1: A former cornfield, this area was not maintained for several years after the land was acquired by the city and has grown up into a mix of staghorn sumac, with a sea of touch-me-not, goldenrod, and aster bellow. There is some Asiatic bittersweet and multiflora rose in this area.

2: The former permaculture farm is now a mix of leftover plantings (bergamot, comfrey, etc) along with wild-seeded species, including common elderberry, asters, goldenrod and Indian hemp. A native tall thistle grows here, but so does Canada thistle, an assertive non-native that could easily take over this open area unless controlled and mowed.

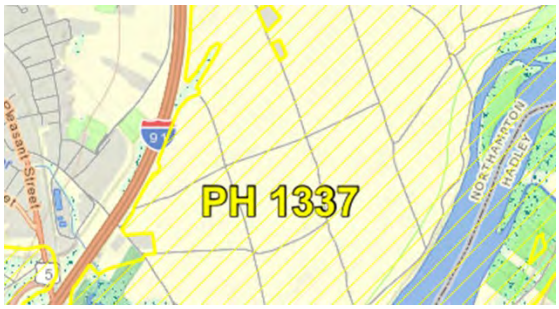
3. Playing field

4. Scruffy hedgerows with a mix of black locust, staghorn sumac, elm, black cherry, silky dogwood, blackberry, former plantings (hazelnut, mulberry, Chinese chestnut, etc), as well as some non-natives, including Asiatic bittersweet and catalpa. In the understory, touch-me-not, pokeweed, clearweed, gill-over-the-ground, and daylily are common here.

W-1: This is the open wetland. Along the margins are silver maple, elm and a few green ash and pin oak. There are also clusters of staghorn sumac, silky dogwood and some winterberry. The open wet meadow is dominated by reed canary grass, but also includes touch-me-not, tickseed, arrow-leaved tear-thumb, common rush (*Juncus effuses*), meadowsweet, Virginia creeper, sensitive fern, poison ivy and some bulrush and sedges. Grape is also found along the margins.

Rare Species

Because of its small size and land use history, this property does not appear to have habitat conditions that support any rare species. A rare clam shrimp, however, has been found in a temporary pond nearby and should be searched for here. Butternut, which is in decline due to a non-native fungus, grows here.



Priority habitat lies just to the east, on the other side of Interstate 91 and along the Connecticut River and its meadows.

Recreation

In addition to its own trails, the property's proximity to the popular walking trail along the dike and the farm roads in the Meadows enhances the property's recreational value. For a small subset of folks, it might even be a welcome respite from downtown Northampton on a lunch hour.

Recommendations

1. Work with the MCCC and neighbors to control the invasive plant species (Canada thistle, Asiatic bittersweet);

2. Repair the small foot bridge and/or keep the brush down in one or two spots along the path to provide visual access to the wetland, which is a nice place to explore and observe;

3. Define the layout and width of the paths and develop a mowing schedule and brush-hogging scheme for the wet meadow. (The paths are currently about six feet wide, which makes it less likely that people will encounter ticks and

Underappreciated wildlife like this Common Meadow Katydid can be found at this conservation area.

therefore may use the property more than if the trails were narrower. That said, there are also a lot of paths and some could be eliminated.)

4. Consider community gardens or other agricultural use in the north-eastern corner (former garden beds of Montview Neighborhood Farm) where there are prime agricultural soils.

The former garden is now a great place to look for wildflowers and birds.

5. If new native plantings are considered, make the decisions carefully—not only because of maintenance responsibilities, but also taking the long-term view (i.e. if trees or shrubs are proposed, what will they look like in 20 years? 80 years? Will they enhance the property? Block a view? Take an Olmsted perspective and carefully consider benefits and disadvantages.)

Sources

Management Plan for the Montview Conservation Area. 2014. MCCC. 10 pp.

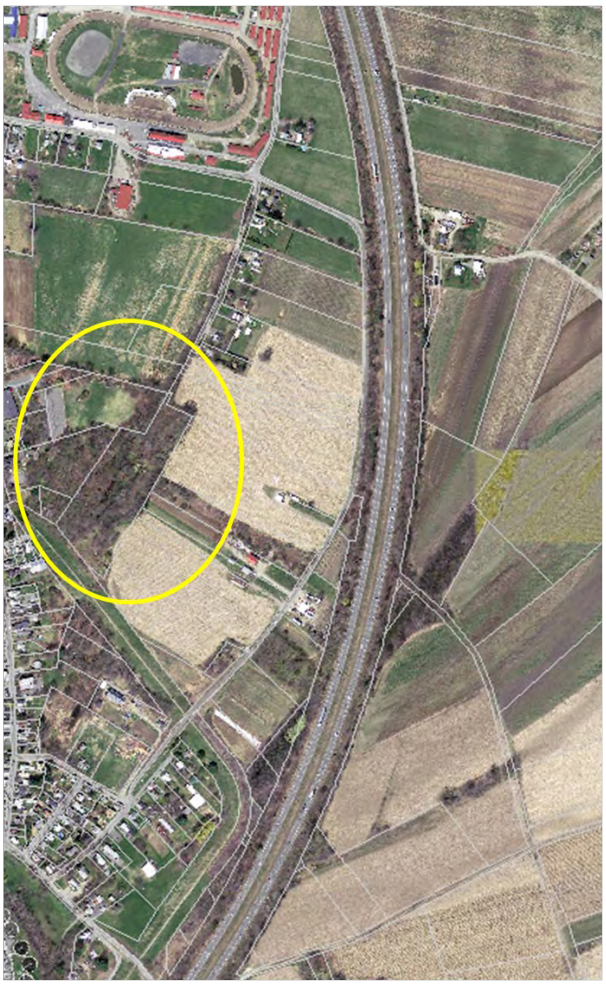
This report was made possible with support from Northampton's Community Preservation Fund.

Photographs © Laurie Sanders.

A Natural History of the Pomeroy Terrace Section

By Laurie Sanders, M.S
December 2014

It is hard to believe that just sixty years ago the land behind the former Northampton School for Girls, now Cutchins School, was an open clearing. Today this area is entirely wooded and includes a network of well-maintained trails. The dramatic change was due in large part to the land's acquisition by the State of Massachusetts, which recently donated the surplus land to the City as conservation land.

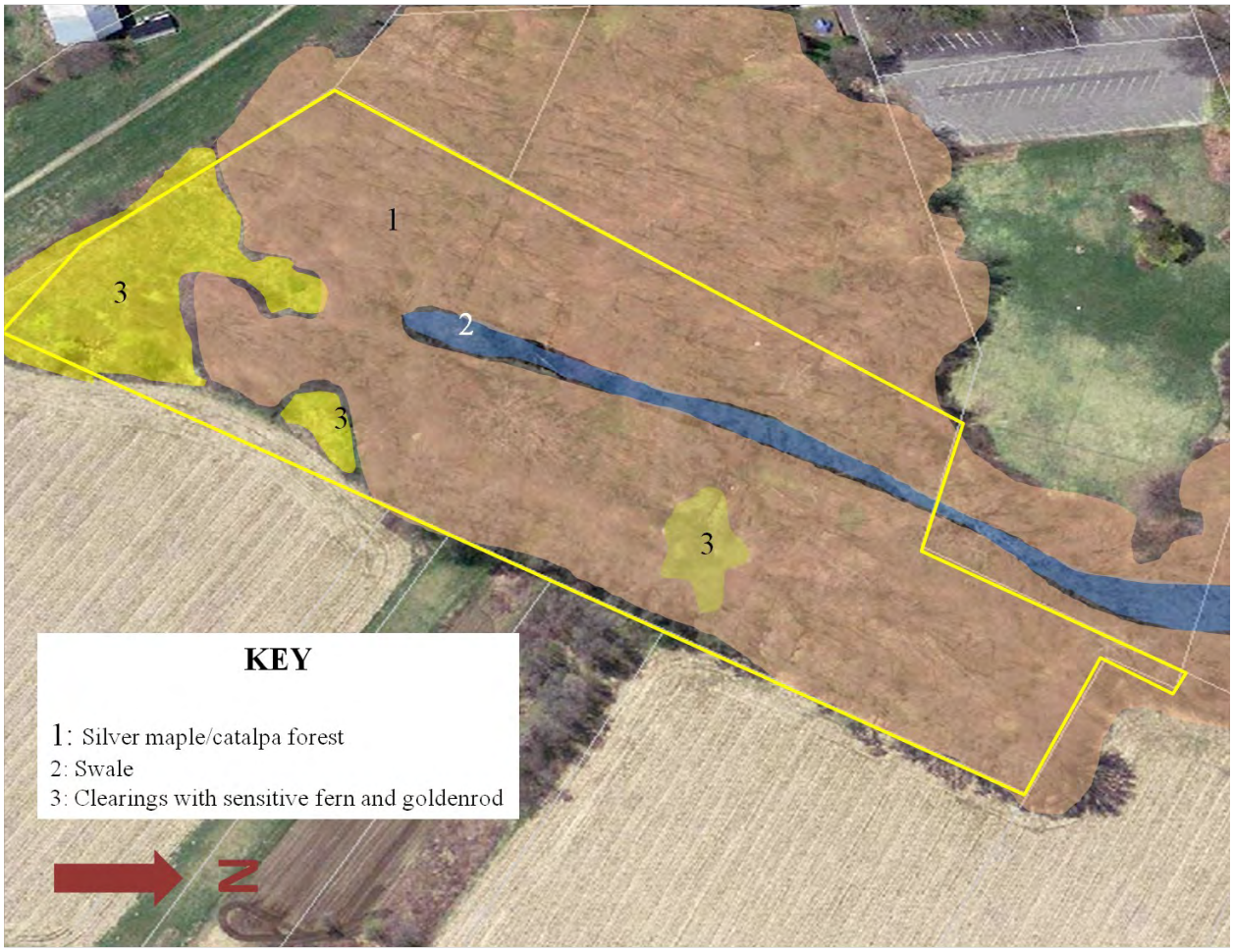


Vegetation Patterns

Created over time by the Connecticut River, this nearly-level property lies within the 100-year flood-plain and includes a long swale that was once part of a river channel or flood trough. Today the swale receives water during extremely high flood events and more regularly, from drainage off the fair-

grounds, which flow into the swale via a long ditch adjacent to Cross Path Road. Historically this water would have drained to the Montview Conservation Area, but the dike (located at the conservation area's southern border and constructed after the 1938 hurricane) acts as a barricade and the water eventually evaporates.

During the last fifty years, this property has been left idle and over time, what was once a former playing field has developed into a seemingly mature forest. The canopy is dominated by silver maple, but includes impressive catalpas and an abundance of elm and Norway maple. The under-story is fairly diverse, but unfortunately many of the most abundant plants are non-native. These include



Asiatic bittersweet, Japanese knotweed, moneywort, privet, goutweed and more wintercreeper than anywhere else in Northampton. The common native species are, in order of abundance, touch-me-not, sensitive fern, jumpseed, avens, poison ivy, wood nettle, mad-dog skullcap, elderberry, and silky dogwood. A small clearing near the dike has a swath of sensitive fern, touch-me-not, avens and goldenrod, as well as clusters of staghorn sumac and silky dogwood. North of the property, along the wet swale, are some massive pin oaks; they show up in the 1952 photograph.

Clockwise from the top are three different views of the park-like forest. The last image is of the open clearing near the dike, which includes a thick swath of goldenrod and other forbs. A sewerline runs near here, which may be why this area is periodically cleared.

Recommendations

1. At this site, the invasive species appear too abundant to try to control. The wintercreeper is especially problematic, but the management of any of these species seems beyond any reasonable investment of time and money. Control invasives where they are encroaching on views and paths, but otherwise, the best course of action may be to do nothing.

A waist-high "carpet" of touch-me-not in the foreground. The structure in the back is owned by the DPW. Meanwhile, a beautiful, interconnecting network of trails has been established on the property and is well-maintained, with wood chips and wooden bridges over the drainage ditches and swale.

2. Develop an agreement with College Church and/or Cutchins to maintain the trails and/or sell the property to one of these entities with restrictions for its future use.
3. Create a connecting trail from the flood control dike to this parcel and encourage greater public use of the property.

This report was made possible with support from Northampton's Community Preservation Fund.

Photographs © Laurie Sanders.

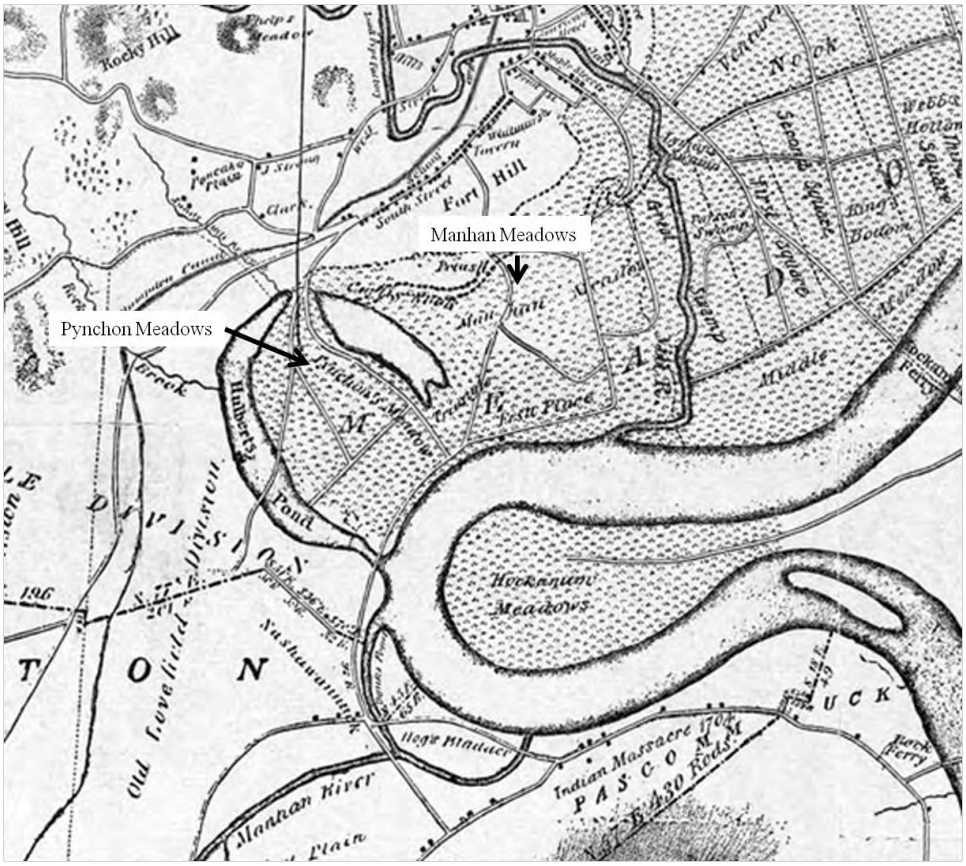
The Natural History of the Pynchon & Manhan Meadows

Prepared by Laurie Sanders, M.S.
December 2014

Pynchon and Manhan Meadows

Using Route 5 as a dividing line, the Manhan and Pynchon Meadows, now sometimes called Arcadia Meadows, encompass about 800 acres. These names—Pynchon and Manhan—were given soon after Northampton was settled in 1654. The first settlers gave John Pynchon, who paid the Nonotuck for the land, 120 acres of meadowland. Pynchon held on to this for a few years and then sold it and according to Trumbull, it has been known as Pynchon Meadow ever since. The Manhan Meadows were divided a little later, in 1657, and were named for the river.

At that time, the Mill River flowed near the toe of Fort Hill, not far from what is now Conz Avenue, and then looped along Fort Hill and emptied into the wetland now known as Ned's Ditch. Due to repeated flooding of their fields, the early settlers dug a new channel in 1721 (*shown on the 1831 map below*).

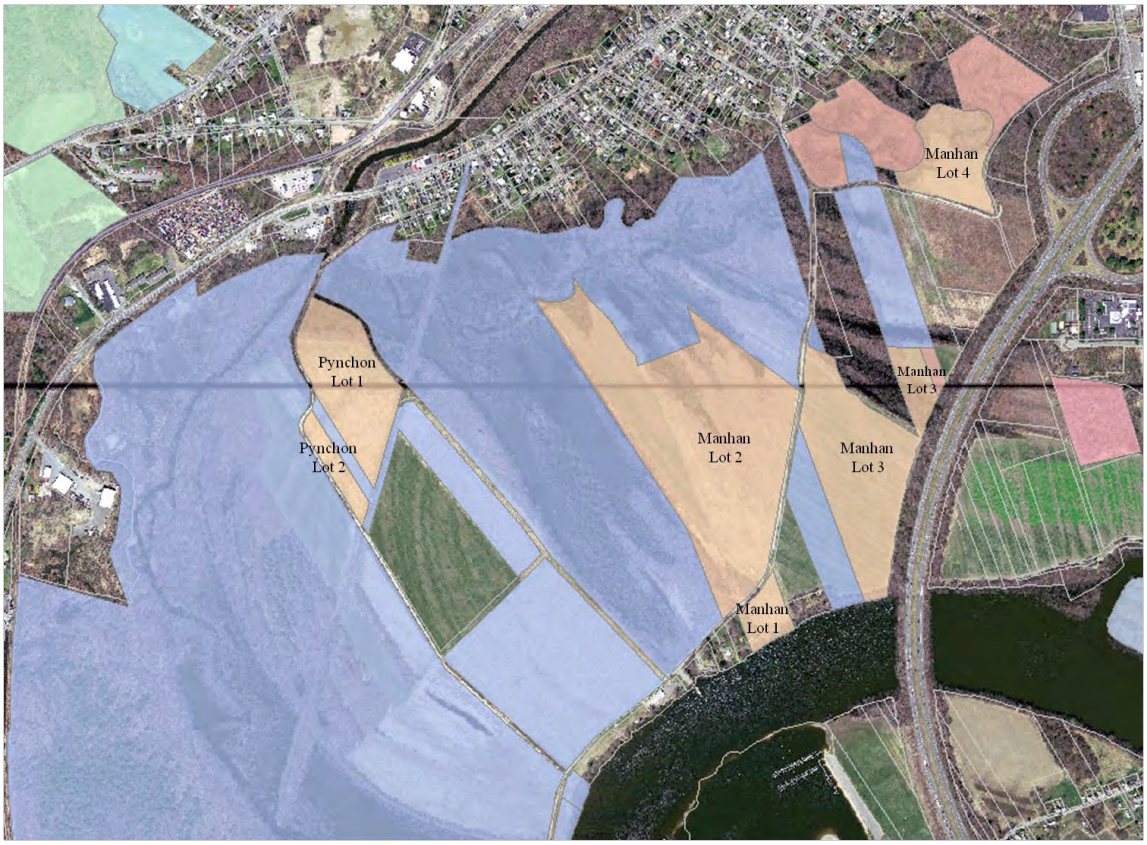


The History of Land Protection in the Pynchon Meadows & Manhan Meadows

Although nearly 90% of the Pynchon Meadows and Manhan Meadows are now protected, conservation efforts here didn't begin until 1944 when the land that now forms the core of Arcadia Wildlife Sanctuary was acquired by MassAudubon. In the 1970s, the organization made several more purchases, with the largest being Ned's Ditch, which is part of an ancient oxbow that was cut off from the Connecticut River approximately 700 years ago. Since the 1990s, MassAudubon, the City of Northampton and the US Fish & Wildlife Service have all purchased more land in the Meadows, and today all but 100 (+/-) acres have been set aside for conservation.

As of 2014, the City-owned conservation areas include six parcels that are mostly open meadows, with a small portion covered with swamp forest and some of the land in active agriculture. Four of the six properties are managed by Arcadia. Two lots are in Pynchon Meadows; the remainder are in the Manhan Meadows.

Conservation Land in the Pynchon and Manhan Meadows As of 2014	
Name	**Acreage**
MassAudubon	520
City-Owned Conservation Areas	106
USFWS Conte Refuge	14
Private Conservation Restrictions	30



Pynchon Meadow Lots 1 & 2

Separated by a narrow strip owned by MassAudubon, these two properties are predominantly hayfield and are managed by MassAudubon as part of its grassland restoration initiative. Lot 1 (15 acres) includes a hayfield and three acres of wetland, while Lot 2 (3 acres) is only a hayfield. The trolley line, which ran between Northampton and Easthampton from 1895-1929, forms the southern border of both lots.

Hayfield

The hayfield includes some native grasses like big bluestem and switchgrass, which were planted and have taken hold, but most of it is covered with clover, timothy, orchard grass and other grasses. This area also has good-sized patches of common milkweed, which, at least until recently was a good place to search for monarch butterfly caterpillars.

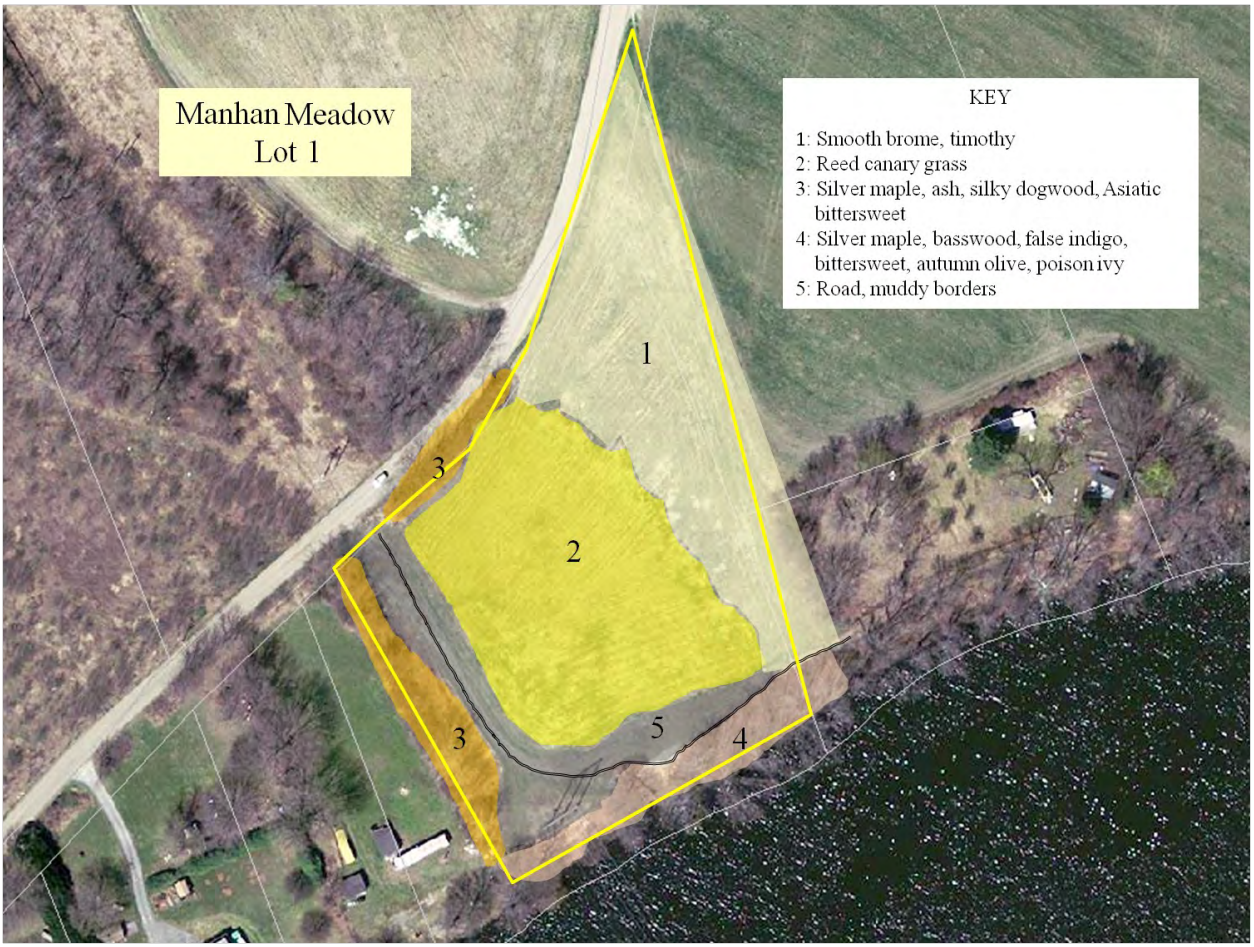
Wetland

The 3-acre wetland on Lot 1 is part of an ancient, 700-year old oxbow referred to earlier. Pin oak and silver maple occur on the wetland's higher hummocks and borders, while the rest is open water interspersed with buttonbush shrub swamp habitat. During the last twenty years, water levels in this area have risen due to beaver activity in the vicinity.

A farm road (Curtis Nook Road) skirts the edge of the fields and beyond it is a scruffy edge with a familiar cast of invasive plants: multiflora rose, Asiatic bittersweet, Morrow's honeysuckle, scattered glossy buckthorn, mulberry and catalpa. These are a concern, but even more worrisome are the extensive patches of Japanese knotweed along the Mill River diversion and Pynchon Meadow Road (via South Park Terrace). They have displaced the native vegetation and have effectively blocked access to the river along most of the road.

Manhan Meadows

Manhan Meadow Lot 1: This 3.5 acre property is an open hayfield, with a narrow margin of trees around three of its edges. A power line and driveway cut along the western boundary and the southern edge borders the oxbow. The driveway serves three cottages, but it is also used by people who fish along the shoreline. Invasive plants along the wooded border include Asiatic bittersweet, autumn olive and bristly locust.



Hayfield

More than half of the hayfield is reed canary grass, while the slightly higher and drier portion is a mix of grasses (smooth brome, Kentucky bluegrass, timothy, reed canary grass), Indian hemp and cow vetch.

Roadside & Powerline Margin

A scruffy border of trees has grown up along the roadside edge and includes a mix of more than twenty species. The woody vegetation includes green ash, sil-

ver maple, silky dogwood, with lesser amounts of American elm, common elderberry and staghorn sumac. Asiatic bittersweet is common in the edge habitat, which also supports a variety of native wildflowers, including fringed loosestrife, groundnut, hedge bindweed, Joe Pye weed, false nettle, water horehound, and white vervain.

River Edge

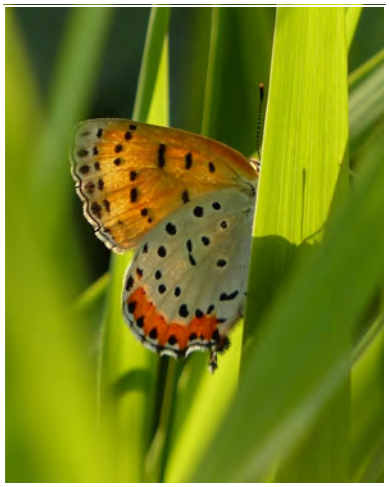
The river's edge includes a slightly different mix of species. The most common trees are pin oak, bass wood, bitternut hickory and green ash, while the shrub layer is loaded with false indigo, poison ivy, autumn olive and silky dogwood. Asiatic bittersweet is common, as are groundnut, goldenrod, and fringed loosestrife.

Views of Lot 1, from the hayfield and access road to the camps and oxbow edge. The bottom image shows the tangle of false indigo growing in front of a narrow treeline next to the water of the oxbow. Many people park here to fish.

Manhan Meadows Lot 2

When I try to imagine what the Meadows looked like when the first English settlers arrived, this field is

what I picture--open and expansive, with a waving sea of grasses, a back-drop of trees along the Mill River and views of the Mount Tom and Holyoke Range.



Beyond the beauty of this field, this lot includes the largest wet meadow in Northampton and is the only known site in the City for the bronze

copper butterfly (a species in decline in Massachusetts). It is also habitat for leopard frogs, which are also in decline; their only known breeding site in Northampton is in the nearby waters of Ned's Ditch. As a whole, the property can be divided into nine main zones that vary in condition due to hydrology and past land use: (1) the forested powerline right of way, (2) the open powerline right of way; (3) a field currently in wheat, (4) wet meadow, (5) upland meadow, (6) sedge meadow; (7) floodplain forest, (8) buttonbush/shrub swamp and (9) open water.

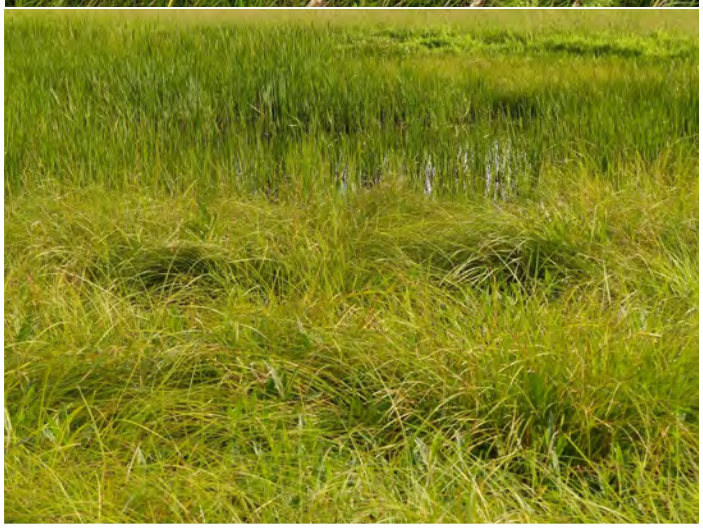
1. Forested Edge of Powerline ROW: A mix of scruffy forest, mostly silver maple.

2. Open Powerline: This linear corridor includes a diverse mix of species, with silver maple, Joe Pye weed, reed canary grass, asters, goldenrods, Indian hemp and a variety of sedges among the most common.

(A) The seed heads of Canada thistle, an aggressive non-native that spreads both by seeds and underground roots. It currently covers about 1/4-1/2 an acre. (B) The dark seed heads of dock, the host plant for bronze copper, can be seen in abundance in the foreground. Behind is a mix of wheat and planted grains. This is where the bronze copper was found.

3. <u>(Semi-)Cultivated Field:</u> A cover crop of wheat was planted here, but several other species have established as well. The presence of a good-sized patch of Canada thistle (*photo above*) was worrisome, as this is a species that can readily take over open field habitats. In addition, it was growing in the vicinity of a large patch of dock (*Rumex* spp.), which is the host plant for the Bronze Copper Butterfly. This is the area where the single specimen of Bronze Copper was found, and not far away, a leopard frog was seen.

4. <u>Wet Meadow</u>: Much of this part of the property is dominated by a mix of reed canary grass, Kentucky bluegrass, sensitive fern and quack grass.



Wet-loving grasses carpet the floodplain of the Manhan Meadows, and in areas with shallow depressions that collect water, sedges (12+ species), cattails and sensitive fern take over.

5. Sedge Meadow: In wetter sections, true wet meadow conditions dominate. This is a sedgy mix, with nearly a dozen types of sedges, as well as bulrush, swamp candles, smartweeds and marsh fern. Box seed, boneset and sensitive fern are also common.

6. Upland Meadow: Only slightly higher in elevation, this area is flooded less frequently and includes a mix of species that are typical of cultivated hayfields. White clover, red clover, daisy fleabane, Queen Anne's lace, sensitive fern, wild madder, ragweed, common milkweed and a mix of grasses (common brome, timothy, quack grass, Kentucky blue-grass) are among the most commonly encountered species.

7. Swamp Forest: On the drier hummocks and margins of the shrub swamp, pin oak, silver maple, green ash, and red maple are common. Black willow is occasional, and sensitive fern, groundnut and reed canary grass are common in the understory. Purple loosestrife and multiflora rose are occasionally found along the sunny margin and there is occasional, fruit-laden glossy buckthorn here as well.

8. Shrub Swamp: Dominated by buttonbush, this habitat also includes silver maple and pin oak along the margins. Speckled alder, winterberry, red maple

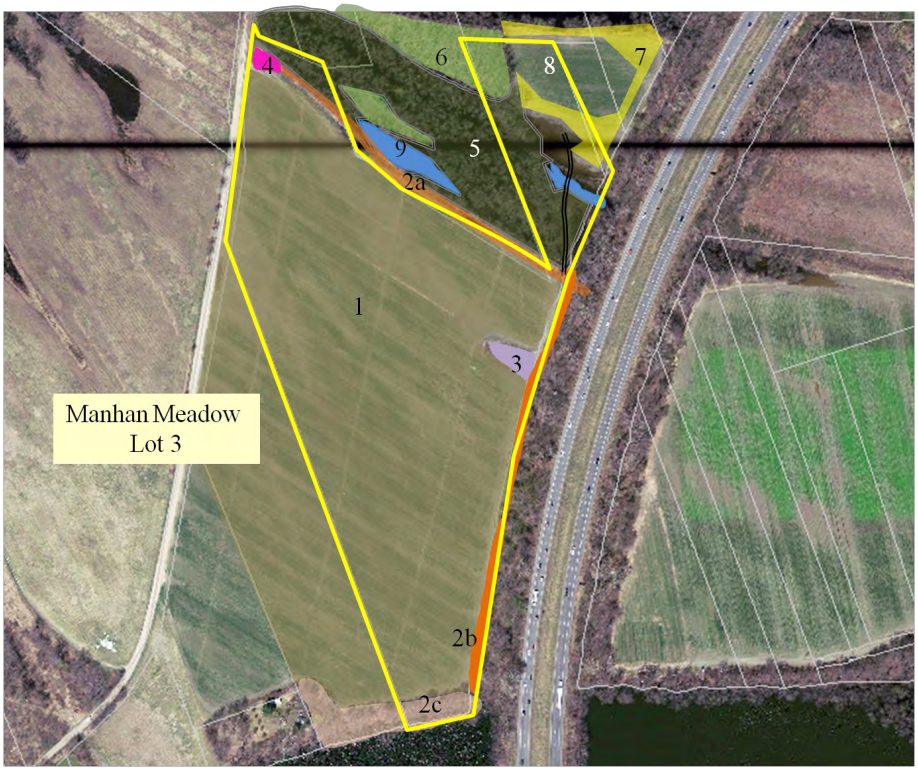
Top: An open water area surrounded by swamp forest; *Middle:* one of several buttonbush shrub swamps; *Bottom:* yellow cow-lilies growing in the deeper open water of the ancient oxbow.

and grapes also share the habitat. The understory is sparse, but beggar's ticks, water hemlock, and poison ivy are found here. Bur-reed and common bladdernut grow in the shallows.

9. Open water: Aside from cow lilies, this area is exclusively open water. No water chestnut was observed here, although Arcadia staff and volunteers hold water chestnut pulls each year in the main marsh. This area should be monitored to ensure that unwelcome species do not invade these quiet backwaters.

Manhan Meadow Lot 3

Currently maintained in agricultural crops, this area is surrounded by a border of trees, shrubs and herbaceous plants. On one side is swamp forest, on the other is Route 91, and one small stretch borders the edge of the oxbow. (Refer to map for vegetation patterns).



1. Cropland

2a. Swamp Forest Border:

Pin oak is the most common tree in the overstory, while alder and silky dogwood dominate the shrub layer. Golden rod, grape, false nettle, and Joe Pye weed are the most common herbaceous plants. Canada thistle and autumn olive were the two non-native species found growing along this border.

2b. Route 91 Border: Black locust, silver maple, and box elder dominate the slopes of the highway.

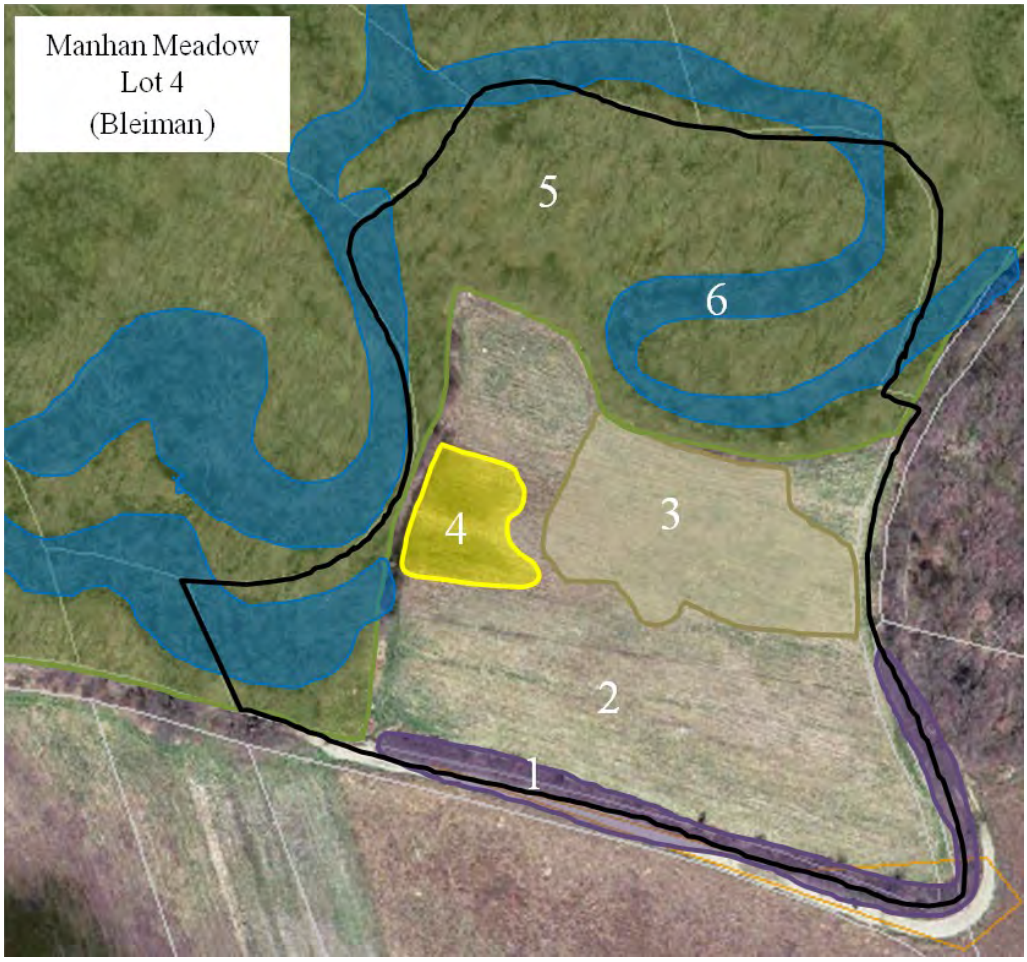
All the farming on city-owned conservation land is done organically.

There is an abundance of Asiatic bittersweet, with occasional autumn olive and catalpa. Grape is common here too.

2c. Oxbow Border: This area has nice access to the shoreline, but it is very noisy because of Route 91. Giant silver maple and ash dominate, with occasional basswood, box elder and bitternut along the edges. The understory is open with grasses, poison ivy, water horehound, false nettle and some Asiatic bittersweet. On the abutting property owned by Arcadia, a single Amur corktree (!) was found growing along the wooded edge.

3. A wet pocket with young cottonwood and some purple loosestrife.
4. A sunny, muddy patch with purple loosestrife, Canada thistle, bristly locust, cocklebur and common plantain.
5. Pin oak/silver maple swamp forest
6. Fallow field
7. Reed Canary Grass dominated wet meadow
8. Hayfield
9. Open water/button bush

(A) A view across the oxbow from the conservation land; (B) Swamp forest, with an understory of sensitive fern; (C) Swamp forest where water gathers for longer periods and prevents vegetation from growing; (D) Amur corktree growing along the margin.



Manhan Meadow Lot 4

Donated by Bruce and Rita Bleiman in 2009, this 9.8 acre parcel is almost equally divided between swamp forest and open field, which is bordered by a narrow hedge row that runs along the dirt road and frames two sides of the property.

<u>Roadside Margin</u>

During the last decade (or so) a shrubby border of vegetation has grown up along the roadside edge and now creates an almost impenetrable border. The woody plants include both native species (staghorn sumac, smooth sumac, mulberry, elderberry, box elder, and slippery elm) as well as an abundant and worrisome amount of non-native woody plants (black locust, Autumn olive, multiflora rose, Asiatic bittersweet, and scattered ca-

The scruffy border along Potash Road is rife with invasive plants .

talpa.) The sunny margin also supports a number of weedy wildflowers, including evening primrose, giant ragweed, rabbits foot clover, Queen Anne's lace, and goldenrod.

Open Field

As part of the terms of the donation, the City is required to cut this field periodically to prevent woody vegetation from becoming established and based on the hedge row growing along the roadside, this will be an important condition to maintain.

The vegetation in the 5-acre field shifts depending on hydrology. One large area is dominated by goldenrod and milkweed, while another big section is covered mostly in grasses and sedges. A third portion (the wettest) is dominated by sensitive fern, reed canary grass, seedbox and false nettle (*Boehmeria cylindrica*). A few purple loosestrife are growing in the wettest area, but the leaves had been extensively damaged by leaf beetles (*Galerucella calmariensis, G. pusilla*) and there were not many flowers.

Field Edge

The edge of the field includes an abundance of silky dogwood and grape, but ash, speckled alder, and silver maple were also common. A few sapling glossy buckthorn (boo!) were also found here.

From the abandoned field, the views of the Mount Tom range are impressive.

Without routine mowing, this field would grow into brush.

Glossy buckthorn isn't yet common, but it is beginning to establish along the edges of the forest. At Arcadia Wildlife Sanctuary, it is a serious problem. As evident here, it is a prolific fruit producer.

Swamp forest & Abandoned Mill River Bed

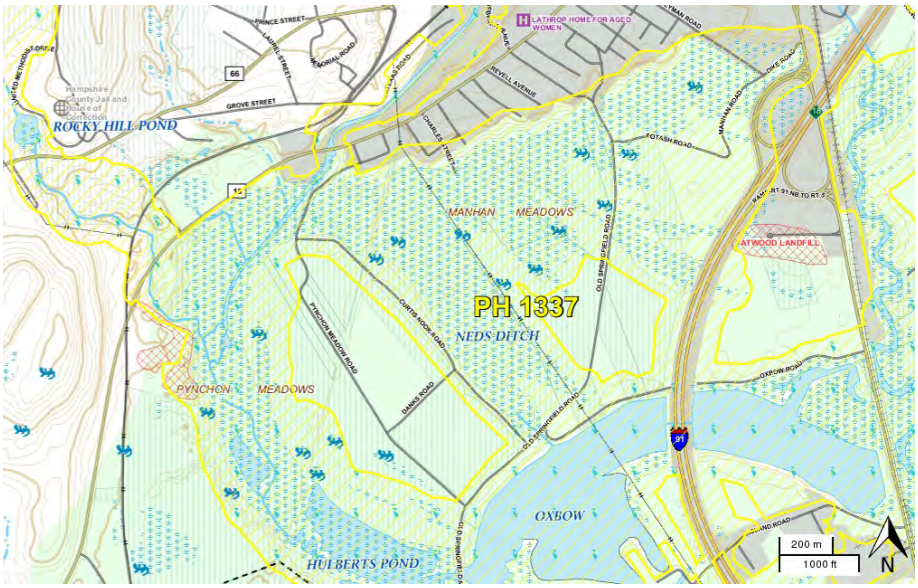
The wooded section of the property includes a portion of the snaking channel of the old Mill River and notwithstanding the mosquitoes, poison ivy and din of Route 91, this part of the conservation area is enchanting. The canopy is a mix of impressive silver maple and pin oak, while the understory is often an uninterrupted carpet of sensitive fern, lady fern, jumpseed and grape. Royal fern, jack-in-the-pulpit, stinging nettle, blackberry, winterberry, elderberry, wild raisin, and bitternut are also common, but most impressive of all is the amount of poison ivy in some places.

As alluring as this part of the forest is, its future appearance and composition is threatened by the spread of two worrisome invasive plants—privet and Morrow's honeysuckle, both of which are extremely common in the shrub layer. These non-native shrubs, along with winged euonymus, are also common in the bordering properties that are protected under conservation restriction. Another threat to this area is Japanese knotweed, which is located just in one location along the roadside edge (so far) near the property's boundary.

Recommendations

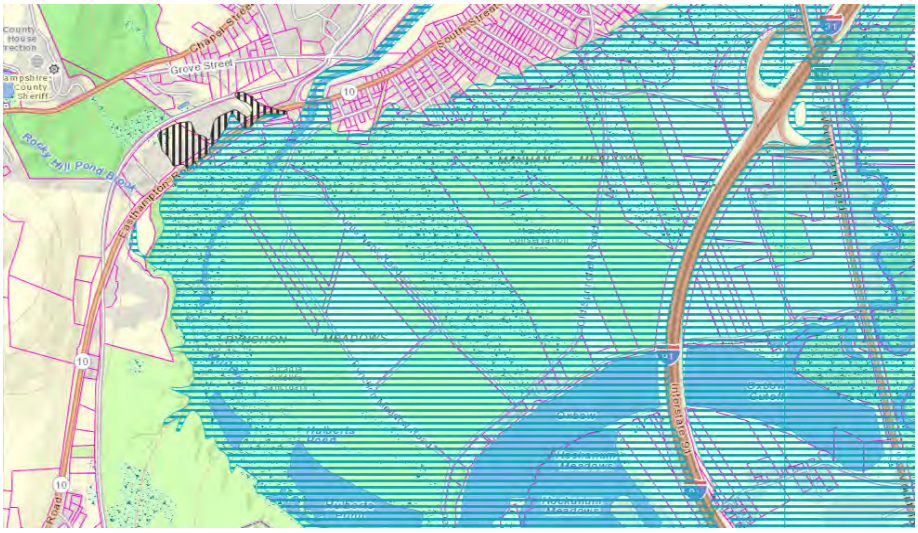
From both a local and regional perspective, Pynchon and Manhan Meadows and their associated swamp forests are significant—historically, agriculturally, recreationally, economically, aesthetically and ecologically. This entire area falls within a MA NHESP "Priority Habitat for Rare Species" and this area has

the highest concentration of certified vernal pools in the city. It is also entirely within the 100-year floodplain zone.



This map shows the locations of certified vernal pools (salamander symbol) and the Priority Habitat for a Rare Species, as designated by the MA NHESP. *Data from MassGIS.*

In terms of stewardship and maintenance, the broad open meadows are, for the most part, well-cared for. Four of the city's six conservation parcels are managed by MassAudubon, which has similar conservation goals as the City, and nowadays all of the land that the City leases to farmers must be maintained organically. Illegal hunting is no longer much of a problem, and even ATV and off-road vehicle use is less of an issue than it once was.



This entire area is within the 100-year floodplain and is important from a public health standpoint in terms of abating storm damage and storing floodwaters.

Today the issues within these meadows are related to illegal dumping (household trash and yard waste) and the spread of invasive plants. Dumping has been a long-standing problem, and although the situation is better than it was years ago, annual clean-ups are needed. One of the worst stretches for yard waste dumping is in the forest along Lyman Road. Signage and more frequent patrolling might help abate this.

Invasive plants require even more attention than trash clean ups. Every field edge has troubles with Asiatic bittersweet, glossy buckthorn, multiflora rose, and autumn olive. Canada thistle is present in some of the fields, and the swamp forest along the former Mill River channel near the Lyman estate are loaded with privet and Morrow's honeysuckle. Meanwhile, Japanese honeysuckle has formed a wall along the diversion channel on Pynchon Meadow Road and other patches have appeared on Potash Road. Just as alarming, the presence of at least one Amur Corktree, a species that is highly invasive in eastern Massachusetts and New York state, does not bode well for the future. Rather than approaching these haphazardly, a logical next step is to convene a meeting to address invasive plant species problems throughout the Meadows (including the Connecticut River Meadows east of Route 5) and develop a comprehensive approach. Obvious stakeholders include MassAudubon, MassHighway, USFWS Conte Refuge, MA DFW, MA NHESP, The Nature Conservancy, Meadows City Conservation Coalition, the farm advisory committee, and local neighbors. Regardless, managing invasive plant species in the Meadows will be challenging, but the first step will be identifying the most important areas to focus on, the species to control, how to control them, and when.

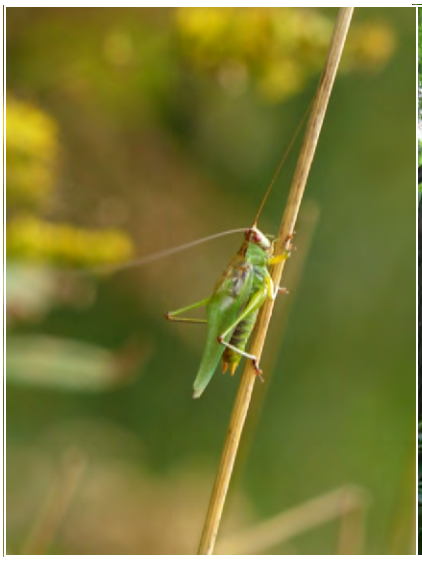
Ned's Ditch, part of the 700-year old abandoned oxbow, includes some of the most extensive shrub swamps in the state and the largest great blue heron rookery in Northampton. In 2012, a pair of bald eagles began nesting here, and this year a pair of great horned owls joined the crowd.

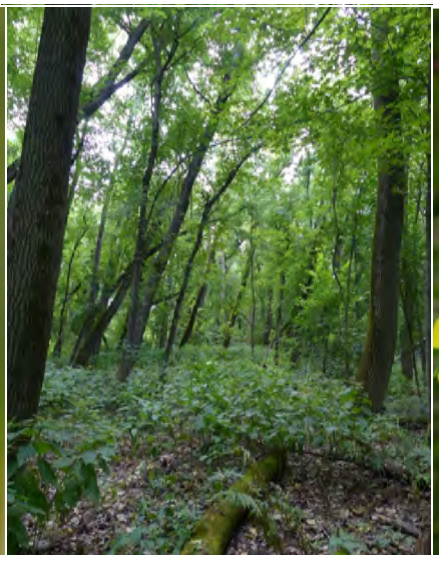
Funding for this report was made possible by the Community Preservation Act.

Photographs © Laurie Sanders.

The Natural History of Rainbow Beach

By Laurie Sanders, M.S
December 2014



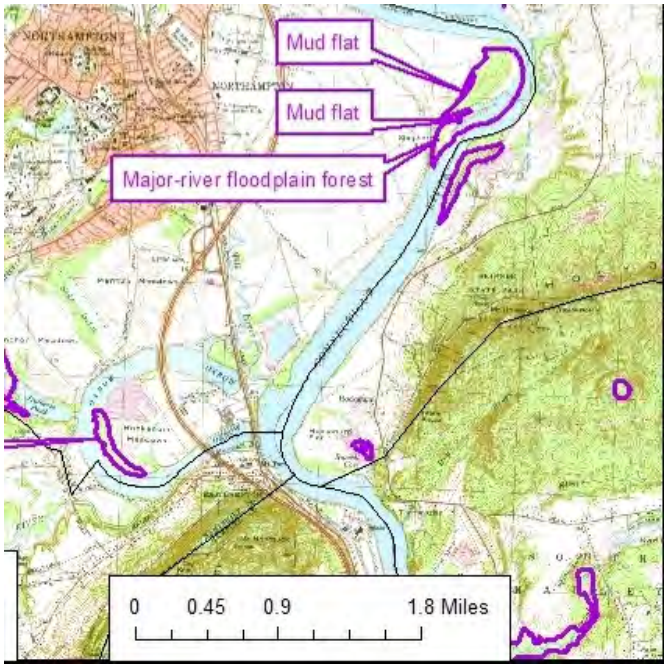


Rainbow Beach Conservation Area

Rainbow Beach

Overview

Together with land owned by the Massachusetts Division of Fisheries & Wildlife, the Rainbow Beach Conservation Area encompasses more than 100 acres and several special riverine habitats, including the second largest remaining tract of unfragmented floodplain forest on the Connecticut River in Massachusetts (Pat Swain, MA NHESP, pers. comm.) and some of the state's best examples of mud flats (admittedly not a habitat that gets most people's hearts racing, but important nonetheless). The broad, sandy beach is also particularly important as it is the only known site in Massachusetts for a dwindling population of Puritan Tiger Beetle, a species that is listed endangered in Massachusetts and threatened at the federal level. The beach also continues to be one of the most popular destinations on the Connecticut River, and in contrast to the problems in 1993, the temporary structures, illegal overnight camping and tree cutting are no longer enforcement issues.



This map highlights the locations of some of the best examples of specific natural community types in the Commonwealth.

Unfortunately, the long-term health of this conservation area (and the nearby MA DFW properties) is now threatened by the spread of invasive non-native plants. The most worrisome of these are Japanese knotweed, Asiatic bittersweet and garlic mustard, but several others (pachysandra, moneywort, purple loose-

strife, Morrow's honeysuckle, privet, glossy buckthorn) are also present in or near the margins conservation area and are likely to spread.

The Rainbow Beach Conservation Area, highlighted in yellow, is located near several other protected properties. Not only is it sandwiched between two parcels owned by MA DFW, it is also in close proximity to hundreds of acres that are protected as part of Skinner State and Mount Holyoke Range State parks. The Elwell Conservation Area is less than a mile upriver and Mitch's Island, now owned by the Kestrel Trust, is even closer downstream. In addition, many more acres have been permanently set aside through APRs, private CRs and as part of the USFWS Conte Refuge—including the farmland immediately adjacent to this conservation area (but not shown on this map).

Rainbow Beach Conservation Area: In Focus

Considered on its own, the city-owned portion of this protected area includes nearly 60 acres of floodplain forest, more than half a mile of sandy shoreline, and impressive views of the Holyoke Range and Connecticut River. Depending on where you are, the shoreline varies from broad, open beach to a narrow, muddy margin crowded with willows. The forested area is also variable, but its overall feel is park-like. Still, it's not the kind of "park" that would appeal to most people. Below an impressive canopy of silver maple and scattered cottonwood, the understory shifts from broad, mud-bottomed swales filled with sensitive fern to slightly higher, drier plateaus and old river terraces that are covered with shoulder-high, stinging wood nettle. In fact, there are acres and acres of stinging nettle. And compounding the wood nettle experience are the mosquitoes, which can be intensely annoying and persistent during the summer. Still, if

A puritan tiger beetle, a federally-threatened and state-endangered species, is held by USFWS researcher Chris Davis at Rainbow Beach in 2011. Davis has just painted it with a unique color code— red + green—which will let him and his team identify this individual if they see it again. This technique, which is based on mark-recapture, allowed Davis to track this beetle's population numbers each year and monitor its increases and decreases year-to-year. The research began in 1997 and the highest number of beetles was 198 in 2005. The numbers began declining in 2008 and in 2013, only 8 adults were found. At the end of that season, the USFWS decided to stop monitoring the Rainbow Beach population and concentrate on areas where this insect's long-term survival is more likely.

Stinging nettle, *Laportea canadensis*, in fruit at the end of the season, and a female mosquito, taking advantage of a passing meal.

you're prepared for these conditions, this is a forest worth exploring. It is, in short, a conservation area unlike any other in Northampton.

Geology & Vegetation Patterns

Unlike almost any other conservation area in Northampton, nearly all of the Rainbow Beach Conservation Area consists of "new" land that was deposited by the river within the last 150 years. The rate of deposition, however, hasn't been steady. In addition, the land is further modified each year by blocks of ice, which scour the beach, and floods, which sometimes tearing open new troughs and swales.

Today the Rainbow Beach Conservation Area is a mix of gentle ups and downs, with broad plateaus interrupted by old river terraces and swales of varying depths, widths and lengths. This variability is particularly evident within the forested portion of the conservation area, where the soils vary from well-drained, nutrient poor sands to water-saturated, nutrient rich mudflats. These variations--in elevation, soil, and moisture—influence the property's vegetation patterns, which can be divided into five main communities—river shoreline, floodplain forest, mudflats, flood troughs, and the former channel (now an inlet) that lies between Shepherd's Island and the mainland. In spite of the differences, all of these communities

A Brief History of Shepherd's Island

Islands are common, ephemeral features on meandering rivers like the Connecticut and Shepherd's Island is no exception. Like Elwell Island a mile upriver, Shepherd's is a relatively recent addition to the Connecticut River.

Now owned by the Massachusetts Division of Fisheries and Wildlife, "Shepherd's Island" began forming in the 1720s, and by 1754 had grown to six or seven acres and the grass was being cut for hay. In 1770 it was sold to Solomon Stoddard, a descendant of one of Northampton's earliest ministers, and for the next thirty years it was known as Stoddard's Island. In 1803, the island was purchased for $1200 by Levi Shepherd, and has been known ever since as Shepherd's Island.

The island's initial rapid growth didn't last and by 1904, it had only doubled in size to 15 acres. By then, the land was owned by the Mount Tom Lumber Company, which had purchased the island in order to construct a series of basalt pilings that, along with a huge chain, would hold back logs floating down from the north. With this set-up, the logs could be released gradually and allowed to drift down to the mill, which was located on Route 5 where the Packaging Corporation of America now stands. Extra logs were stored in the Oxbow, which used to be called the "Old Bed of the Connecticut River".

By the 1950's, Shepherd's Island had long since been abandoned by the Mount Tom Lumber Company and in the intervening decades, the channel separating the island from the mainland filled in. By the 1980s, Shepherd's Island was no longer an island, but part of the mainland.

A log jam on the Connecticut River in 1915. *Courtesy Forbes Library.*

Top to Bottom: 1952 aerial, 1965, and 1986. Lots of changes—in Shepherd Island, the beach and vegetation. There has also been considerable cutting upstream of the beach on the northern side.

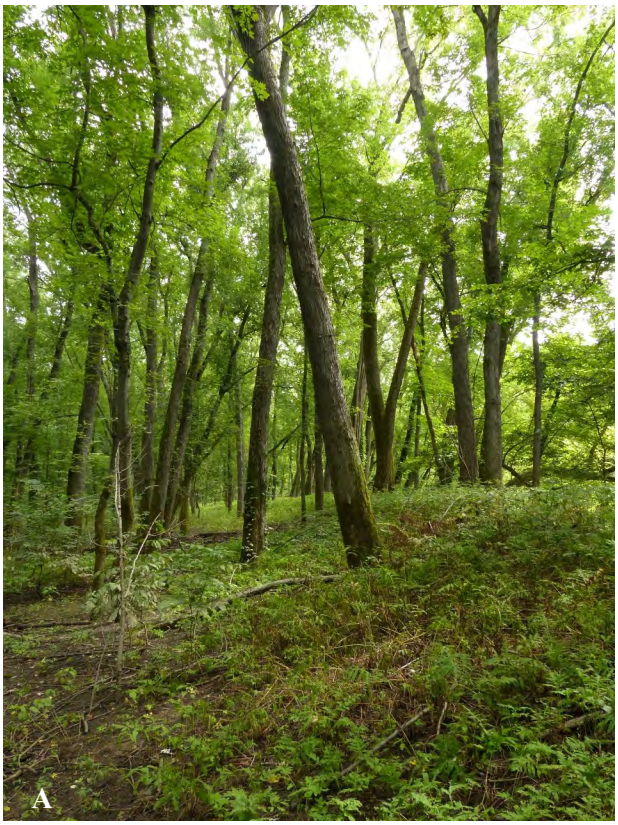
Key to Vegetation Patterns: (1) Floodplain forest; (2) Flood channels & mudflats; (3) Sandy beach; (4) Muddier shoreline.

have one thing in common: they all contain perennial plants that can withstand periods of flooding that lasts for weeks at a time.

<u>The Floodplain Forest</u>

Just behind the arc of black willow, the true floodplain forest habitat begins. It is the dominant community type and covers more than 90% of the conservation area, from the river's edge to the vast farm fields.

The park-like quality of the floodplain forest, with ostrich fern in the foreground and an immense carpet of stinging nettle below an arching canopy dominated by silver maple, and with a single sycamore. It is one of my favorite habitats.



(A) The floodplain forest is not a level plain, but a mix of low ridges and broader, bottomland swales. These slight changes in elevation strongly affect the hydrology and plant communities. (B) Butternut is a species in serious decline due to the arrival of a non-native fungus, but several good-sized butternuts can be found within the conservation area.

As is typical of floodplain forests, there is no shrub layer, only a canopy layer above a carpet of herbaceous plants. In this case, the forest is dominated by silver maple, with occasional cottonwood, and widely scattered black willow, ash, sycamore and elm. The herb layer varies depending on the moisture, soil and light conditions. In the muddier swales, there are swaths of sensitive fern, false nettle, clearweed, mad dog skullcap, water horehound and grasses. In siltier settings, ostrich fern takes over, and on many of

More views of the floodplain forest and its variations in hydrology and plant communities.

(A) Yellow touch-me-not is common in the richer soils of the floodplain forest and like spotted touch-me-not, it is a type of *Impatiens*, so named because of its explosive seed pods. (B) Along the edge of the river, in low swales and flood channels you can often find huge rafts of branches and trunks that have been carried downriver and deposited during times of high water. (C) Although not the most common plant, poison ivy sometimes is found in abundance. In this view, it is carpeting the ground and climbing up the trunks.

the sandy, old river terraces and plateaus, the forest understory is composed of a single species: wood nettle (ouch!). Although painful for us to walk through, it is also the host plant for red admiral butterflies and in some years, thousands of butterfly caterpillars can be found feeding on the leaves.

Flood Channels

Within the Rainbow Beach Conservation Area are several flood channels , the largest of which is just inside the boundary of the conservation area and parallels the farm fields for most of its length. Gouged by

floodwaters, this channel helps drain the farm fields and extensive floodplain nearby. As you head south, it gets gradually broader and deeper. So deep, in fact, that even during the driest part of the year, it still contains water. Just before reaching the inlet, the channel narrows abruptly. A large amount of flood debris has accumulated at this point and in recent years, beavers have built a dam here as well.

(A) A type of smartweed blooms in this open glade that is dominated by a muddy understory and surrounded by willows and silky dogwood. (B) The open glade , as seen from the edge of the floodplain forest.

Mudflats

By mid-summer, the floodwaters in the channels and low swales have evaporated and exposed the gentle slopes and muddy bottom. A mix of plant species can be found here, all of them able to tolerate wet, poorly-oxygenated, but nutrient-rich soils. Among the more common are touch -me-not, false nettle (*Boehmeria cylindrica*), monkeyflower, fringed loosestrife, clearweed, beggar's ticks (*Bidens cernua; B. vulgata*), smartweed (*Polygonum* spp.), various umbrella sedges (*Cyperus* spp.), grasses, young willows (*Salix* spp.) and silky dogwood. These plants and sprawling shrubs provide food and cover for a wide range of animals, from katydids and native bees to spotted sandpipers and raccoons.

Muddy Shoreline

Although known as Rainbow *Beach,* the shoreline along much of the conservation area is actually quite muddy. It is also quite narrow, and the mix of sand and

silt near the water's edge supports little to no vegetation. A few yards further from the river, however, is a thick band of black willows, their branches reaching out toward the light. Along this same margin, between the water's edge and higher ground, you can also now find intermittent patches of Japanese knotweed and the twisting vines of bittersweet.

One of the fascinating aspects of the beach's ecology is the vegetation patterns, easily seen in the image above, which vary depending on the underlying substrate, flooding, and deposition history. In this view, the vegetation zones shift from open beach to a band of annuals (mostly grasses) to a zone of perennials (which includes both invasive purple loosestrife and state-listed sandbar willow) to an arc of willows to finally, taller silver maple. These consecutive, arcing bands of vegetation are, in fact, why the area was named Rainbow Beach.

Beach

The most used and famous part of this conservation area is the beach, which attracts hundreds of boaters during the summer season. The sandy beach is mostly open, but along its back border grow a mix of willow species (including Sandbar Willow, *Salix*

Beach cocklebur (*inset photo A*) is a specialist of sandy areas like this one. Its spiny seeds, which have recurved hooks, are mammal-dispersed.

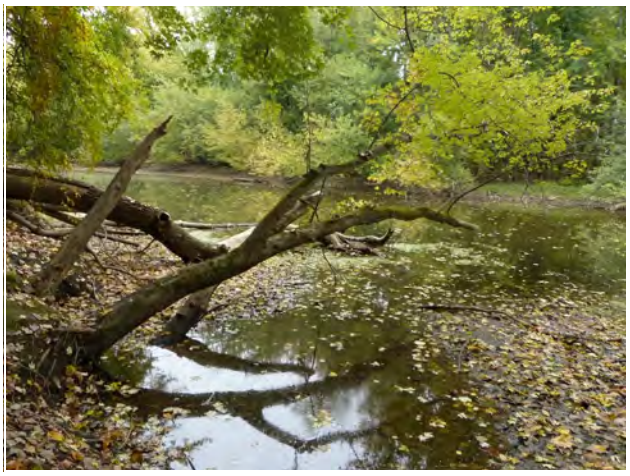
Many kinds of wildlife (*inset photo B*), both common and rare, can be seen at Rainbow Beach. This butterfly is a type of skipper.

The views from the conservation area are impressive, taking in the Summit House, Holyoke Range, and in this view, a beaver swimming past. At present, the only way people can legally access Rainbow Beach is by boat.

exigua, a state-listed species), beach cocklebur, Indian hemp, grasses, and sedges. There is also purple loosestrife in this upper-beach zone.

The Inlet

Although not officially owned by the City or MA DFW, this quiet backwater was once one of the main channels around Shepherd's Island. Today it supports a handful of aquatic plant species that thrive in still water, like water starwort (*Callitrichne* sp.), waterweed (*Elodea canadensis*), and duckweed (*Lemna* spp.). During spring and fall migration season, this inlet is a hotspot for ducks (mallards, wood ducks, blue-winged teal, ring-necked ducks, ruddy ducks, common mergansers and American widgeon) and other waterfowl. Throughout the year, this is also a good place to watch for kingfishers perched on the overhanging branches and find great blue herons hunting along the shoreline. Pickerel frogs, American



toads and painted turtles are the amphibians and reptiles most commonly seen here. And deer, beaver, raccoon and red fox are now common to find here as well.

Invasive Species & Other Recommendations

In terms of invasive plants, the situation at Rainbow Beach is mixed. Although many areas remain dominated by native plants, there are also several places where invasives have gained ground. Particularly worrisome are the large and expanding patches of Japanese knotweed, which occur along the edges of the conservation area (field edge and riverside) and also scattered in its interior. Garlic mustard is par-

Common non-native plants in the Rainbow Beach Conservation Area and vicinity include:

(A) Japanese knotweed

(B) Garlic mustard

(C) Moneywort

(D) Morrow's honeysuckle

(E) Asiatic bittersweet

(F) Purple loosestrife

(G) Catalpa

ticularly prolific near the farm fields, and not far from the field edge is an old river terrace with a dense tangle of multiflora rose and Asiatic bittersweet, with occasional catalpa and Japanese barberry. In fact, in 2013 this area earned the dubious distinction of having the second largest known bittersweet vine in the Commonwealth. The individual vine measured more than 8 inches across!

The whopper bittersweet vine, found by Northampton resident Allison Bell, was cut and herbicided in 2013 by forester Lincoln Fish. It is now completely dead and its chain-sawed vine is rotting away. The radio piece about it was carried nationally and can still be heard on the archives of *Living on Earth*.

Other invasives on the property include purple loosestrife along the shore, moneywort in the muddier soils, and privet along the edges of the farm field. The adjoining land owned by MA DFW includes a similar coterie, but in addition, there are at least two patches of pachysandra growing in the forest on the Rainbow Beach property. MA DFW is now trying to control all of the invasive plants on its property (Chris Buelow, MA NHESP, email correspondence) and a collaborative campaign with the City of Northampton would prove even more effective.

Shattered stalks of Japanese knotweed in the foreground.

1) Create a permission system to gain overland access to Rainbow Beach. Currently the only public access to Rainbow Beach is by boat. It would be ideal to work with the local farmers and landowners to develop a by-permission-only access policy for natural history walks and to take advantage of the existing trail along the north margin. Public access should preclude motor vehicle use and only allow foot traffic.
2) Monitor for trash at the conservation area and in the vicinity.

3) Conduct an inventory of the largest trees in the vicinity of the conservation area. There are some very large hickories, cottonwoods and silver maples.

This report was made possible with funding from Northampton's Community Preservation Fund.

Color photographs (c) Laurie Sanders.

Sheldon Field Farmland

By Laurie Sanders, MS

December 2014

Both Sheldon Recreation Field and the corn-field, shown in light blue. Although most of this is owned by the City, the Broad Brook Coalition has a shared interest in the land that is under cultivation. They are working with the Meadows City Conservation Coalition regarding steward-ship.

This land abuts the Sheldon Recreation Field and is currently planted with corn. It will eventually be used for recreation. Although of limited value to wildlife, as a cornfield it does provide some value to Canada geese and other migratory birds, which feed on the stray corn and other weed seeds after the harvest.

Part of the property abuts the slopes along Interstate 91, which have grown into a tangle of cottonwood and silver maple, as well as cascades of bittersweet. These additions to Sheldon Field were acquired in two transactions. In 2004 the Kielec family donated 2.6 acres, and in 2008, Charles Jasinski donated another 1.6 acres in memory of William Jasinkski. Mr. Jasinski currently has a ten-year lease agreement with the City to farm the property for $1.00/year. The Broad Brook Coalition and Meadows City Conservation Coalition are responsible for maintaining the conservation restriction.

A Brief History of Sheldon Field

In 1954, on the occasion of the Northampton's 300th anniversary, Theodore Sheldon leased his family's 10-acre tract to the City for use as a playground for 99 years. The price was a dollar a year. Sheldon's family had owned the land for seven generations, ever since it was given to Isaac Sheldon, one of Northampton's first settlers, as part of his home lot and meadowlands.

After Theodore Sheldon died in 1969, the land was transferred to his heir, who sold it to the City in 1999. It now includes a mix of playing fields and a commuter lot.