



Friends of the Old Croton Aqueduct

Newsletter
No. 50, Winter 2016

New Year's Resolution: Rid the Trail of Invasives!

Diane C. Alden

An invasives-free trail? Can we accomplish such an ambitious goal? In some places, yes! Although a few parts of the trail are so overrun with invasive plants that the most practical solution at this point is not to remove them but to prevent their further spread, other parts can be cleared and maintained in a relatively invasive-free state. The challenge is to decide where to deploy our resources.

Invasive plants have no natural enemies (even the deer don't eat them) so they are beginning to crowd out our native plants. Some particularly virulent vines are even strangling trees. And sadly, some attractive garden plants, for example, burning bush, have turned out to be invasive and have migrated to the trail.

Up to now, there has been no master plan. The Hastings Vine Squad has been tackling vines along the trail in Hastings for the past few years and the Friends have been hosting invasive plant removal days each May since 2012 as part of I Love My Park Day. But local efforts are no longer enough. New York State has now created a framework for organizations such as the Friends to get involved in managing invasive plants and, with the help of State Parks, the Friends are beginning the process of devising a long term and more comprehensive strategy for dealing with these invaders.

The first step was to ascertain which plants are on the trail, where they are growing and how abundant and widespread they are. To this end, in 2014 we partnered with the New York-New Jersey (NY-NJ) Trail Conference and Teatown Lake Reservation to conduct a two phase scientific study of the invasive plants on the trail.



In this 2013 I Love My Park Day photo, volunteers working in the northern section of the trail are pruning and pulling down porcelainberry vines that were obscuring a historic stone wall and overwhelming trees in the vicinity. Photo by Louis Vaquerano

In the first phase, along with other volunteers, we learned how to identify 14 invasive species that include trees such as the Norway maple, shrubs, vines and herbaceous plants and how to document their location using hand held GPS devices.

For the study, the Aqueduct was divided into 10 sections of about 2.6 miles and each section was further divided into 100 foot lengths, about 14,000 lengths altogether. Volunteers were assigned specific sections and were expected to walk the trail during the summer months to identify specific plants, their location and type of habitat, whether they were trailside or distant and how many there were in each length of the trail: few (1-3), some (4-11), many (11-100) or extensive (more than 100).

The chart below shows the number of 100 foot lengths in which each plant was observed to be growing. It does not show the abundance of the plant in each of these. The density of each invasive plant is shown on separate maps, each of which shows a 2.6 mile section.

Included in the list are the 14 plants selected for Phase 1 of the assessment during which all sections of the trail were examined, and 10 of the 11 selected for Phase 2 (one plant was not found). In 2015 the Phase 2 plants were assessed in 70 percent of the sections. It is anticipated that the remaining 30 percent should be completed during 2016.

Scientific Name	Common Name	# of Observations
<i>Microstegium vimineum</i>	Japanese stilt-grass	527
<i>Ampelopsis brevipedunculata</i>	porcelainberry	435
<i>Rubus phoenicolasius</i>	wineberry	403
<i>Acer platanoides</i>	Norway maple	357
<i>Rosa multiflora</i>	multi-flora rose	304
<i>Berberis thunbergii</i>	Japanese barberry	290
<i>Alliaria petiolate</i>	garlic mustard	268
	None*	230
<i>Euonymus alatus</i>	burning bush	212
<i>Celastrus orbiculatus</i>	oriental bittersweet	199
<i>Ailanthus altissima</i>	tree-of-heaven	184
<i>Lonicera japonica</i>	Japanese honeysuckle	109
<i>Fallopia japonica</i> var. <i>japonica</i>	Japanese knotweed	65
<i>Hedera helix</i> 78	English ivy	54
<i>Lonicera</i> spp.	bush honeysuckle	47
<i>Acer palmatum</i>	Japanese maple	43
<i>Cynanchum louiseae</i>	black swallowwort	43
<i>Wisteria</i> spp. (species unknown)	wisteria (species unknown)	24
<i>Viburnum sieboldii</i>	Siebold's viburnum	16
<i>Aralia elata</i>	Japanese angelica tree	11
<i>Persicaria perfoliata</i>	mile-a-minute vine	9
<i>Viburnum dilatatum</i>	linden viburnum	7
<i>Elaeagnus umbellata</i>	autumn olive	4
<i>Lythrum salicaria</i>	purple loosestrife	1
<i>Pyrus calleryana</i>	callery pear	1

*There were 230 one hundred foot lengths of the trail on which neither Phase 1 nor Phase 2 invasive plants were found. There are many other invasive species on the trail; those selected are the ones that the NY-NJ Trail Conference chose as being the most relevant for study – the first group included the most common invaders and the second group included more recent, emerging species.

The Maps

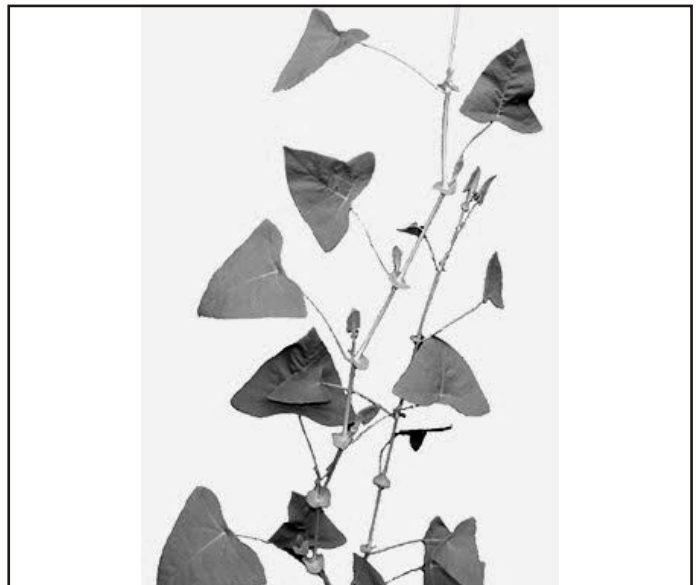
The NY-NJ Trail Conference staff and volunteers are producing section by section maps, documenting the location of each species listed above as well as their abundance. Since 10 sections and 24 species were documented, there will be a total of 240 maps. We plan to make the maps available on the Friends' website so that users will be able to search by section to see which plants were found in that part of the trail and how abundant

they were.

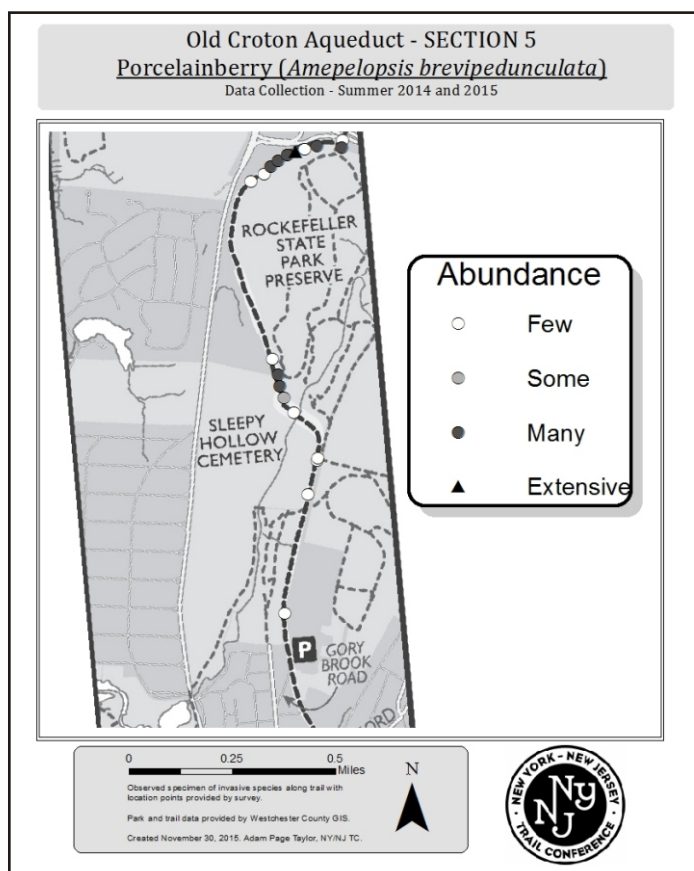
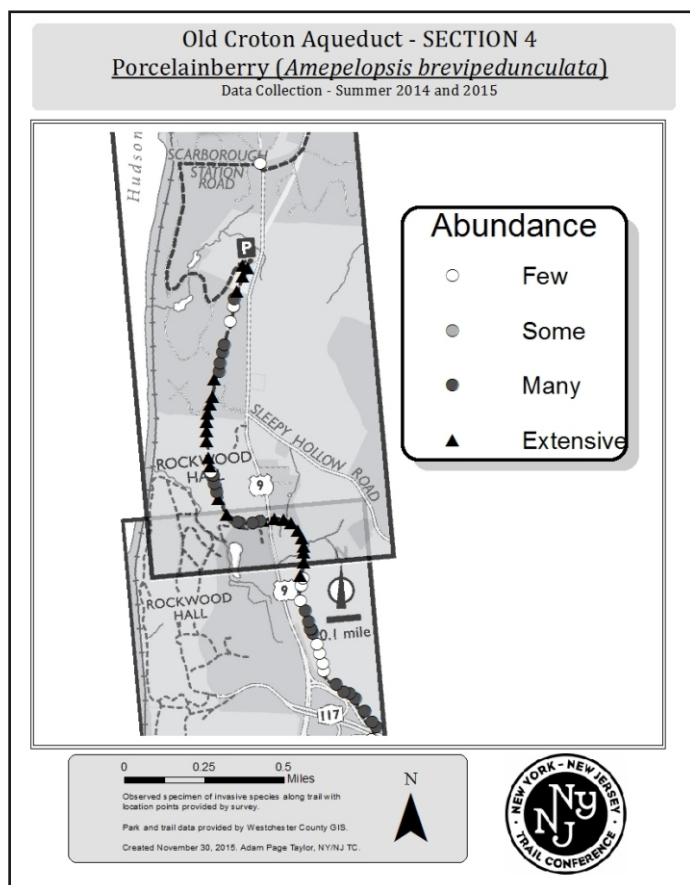
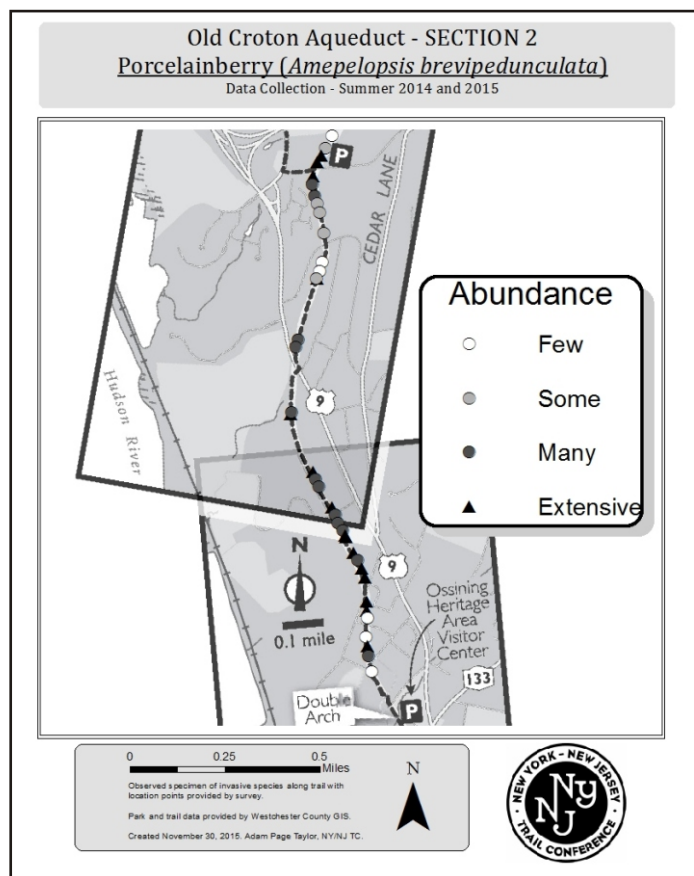
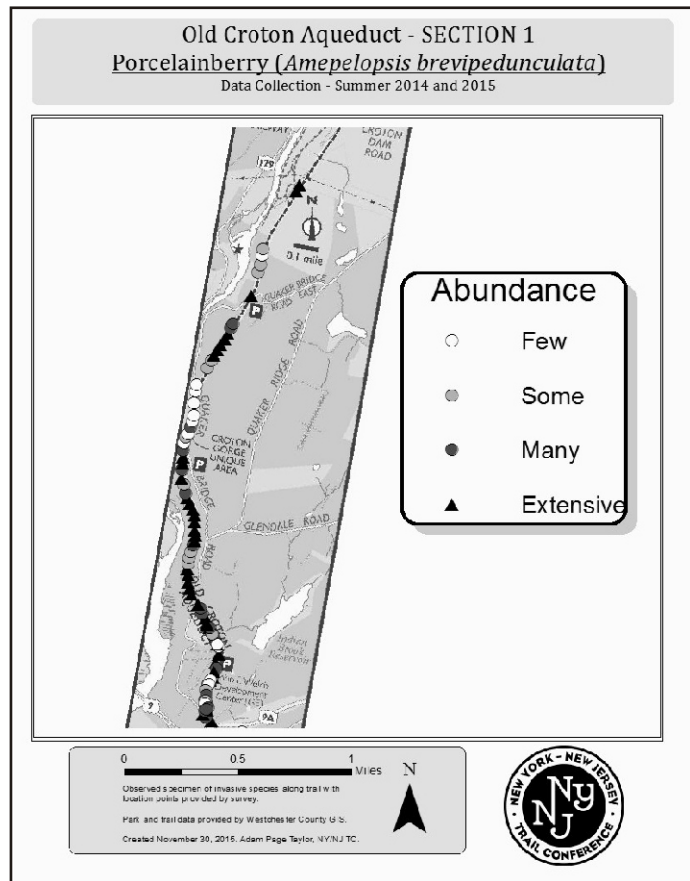
The sample maps shown on pages 3 and 4 document the extent of the porcelainberry vine and mile-a-minute vine in selected sections of the trail. (The numbering of the maps goes from north to south.) The porcelainberry vine, shown below, was the second most frequent species found.



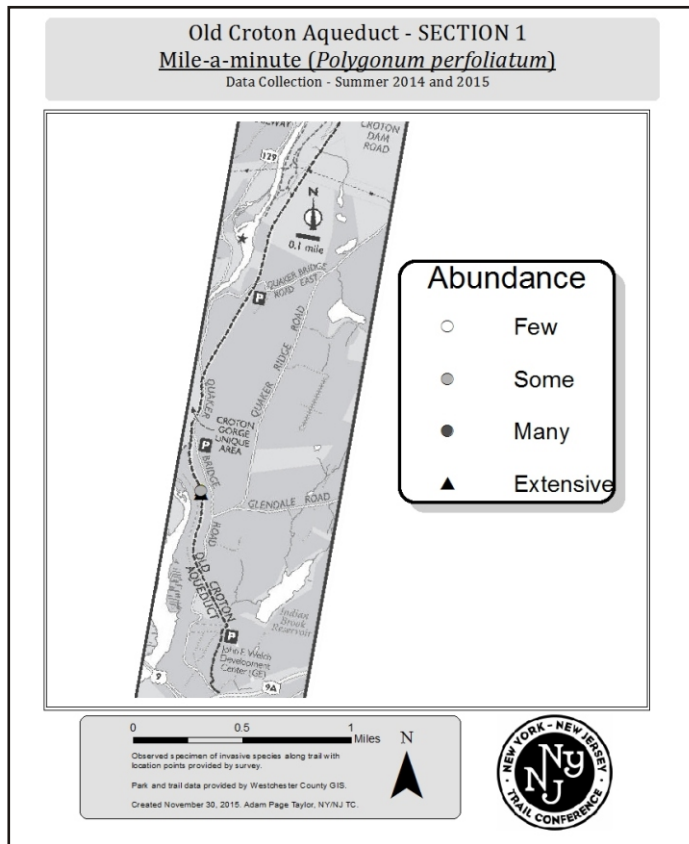
The Phase 2 part of the study included the mile-a-minute vine, shown below. Interestingly enough, the mile-a-minute vine was one of the least frequent species documented; it was found in just a few sections during the Phase 2 survey period in 2015. It is considered an emerging species and, if left to its own devices, can take over entire hillsides. Since it was found in only a few sites, this plant would be an excellent species to target for eradication since there is a good chance we could keep it from spreading.



Maps Showing the Abundance of the Porcelainberry Vine on Four Sections of the Trail



Maps Showing Abundance of Mile-A-Minute Vine in Sections 1 and 10



What can happen when the mile-a-minute vine runs rampant.
 Photo was not taken on the Aqueduct Trail.

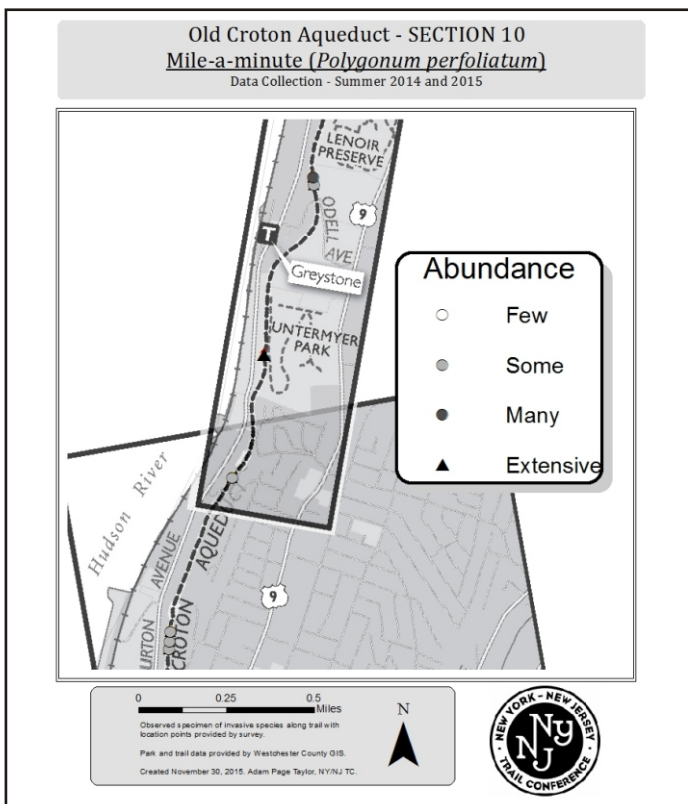
Concerns about invasive species are not limited to the Old Croton Aqueduct Trail. Programs to eradicate non-native species are being launched in many states. New York State, for example, has taken significant steps to raise public awareness and to limit environmental damage. In March 2015, the New York State Department of Environmental Conservation issued regulations banning the sale and transportation of 126 species identified as invasive. The regulations, which address the problem of other types of invasives such as non-native insects, fish and other non-botanical species, cover 69 plants, 17 of which are on the list of the plants we surveyed. A color brochure with questions and answers and excellent pictures can be found at: http://www.dec.ny.gov/docs/lands_forests_pdf/isprohibit edplants2.pdf. The complete list is available at: <http://www.dec.ny.gov/animals/265.html>.

For some species there is a grace period: for example, nurseries are allowed to sell off their existing stock of Japanese barberry. Gardeners who already have barberry, burning bush and other ornamental invasive plants in their yards won't be penalized, although they are encouraged to consider replacing them with native plants.

Establishing Priorities for Intervention

The trail in Westchester County is just over 26 miles long. Its condition in terms of invasive plants varies. Some stretches are relatively invasive free. Others are being overwhelmed. Now that we will soon have a good database indicating where the invasive species are and how extensive the invasion is, we can begin the process of deciding where to focus our efforts.

There are a number of options. One approach is to determine where the trail is least invaded and work



north and south from there to extend the invasive free zones and then maintain them by constantly monitoring their condition and taking appropriate actions as needed. Another is to identify areas of scenic beauty that should be preserved and specific historic structures, such as stone walls, that are being threatened. In addition we might pinpoint particularly valuable trees that are being attacked by vines and could benefit from concentrated efforts. The Friends will be working together with State Parks during the coming year to review the maps, make some reconnaissance trips to identify specific areas for targeted attention and establish priorities for intervention.

Future Plans

The next stage will be to work on plans in coordination with State Parks. Our tasks will include identifying the best management practices for control of each specific plant and obtaining the resources including funding to deal with them. Some work has already begun as groups and individuals have undertaken management of specific sections. As we proceed, information will be available on the Friends website: aqueduct.org.

What You Can Do

Readers of this article are encouraged to nominate particular sections for attention. Please send your suggestions to dalden@aqueduct.org. You are also invited to spearhead ongoing invasive plant removal activities in your favorite section, or to volunteer when we organize specific removal events such as those planned for May 7, 2016. Questions, comments and offers of help can also be sent to Diane at the above email address.

The Friends wish to thank Linda Rohleder, Ph.D., who runs the invasive programs at the Trail Conference, for her leadership and assistance. Dr. Rohleder is also the Program Coordinator, Lower Hudson Partnership for Regional Invasive Species Management (PRISM), a program of New York State Dept. of Environmental Conservation that is administered by the Trail Conference. Also thanks to State Park interns Daniel Marelllo and Mathew Wersebe, to Adam Taylor, volunteer at the Trail Conference who produced the maps, and to all of the volunteers (including some Friends' members) who walked the trail to do the survey work.

For inquiries about Old Croton Aqueduct State Historic Park or to report trail conditions, call Park Manager Steven Oakes at 914-693-5259; mailing address: 15 Walnut Street, Dobbs Ferry, NY 10522.



Birdwatchers encountered on the trail during the invasive plant survey. Photo by D. Alden

The Lower Hudson Partnership for Regional Invasive Species Management (LHPRISM) is one of eight regional partnerships in the state of New York. The PRISMs are funded by the Department of Environmental Conservation through the Environmental Protection Fund. Each PRISM is hosted by a non-profit organization. The LHPRISM is hosted by the NY-NJ Trail Conference; the Program Coordinator is Linda Rohleder, Ph.D., the Trail Conference's Director of Land Stewardship. The LHPRISM works to address invasive species issues through its partnerships; currently over 35 organizations and individuals have signed on as partners concerned about invasive species in the region. The PRISM partners work together on prevention, detection, management, and education to stop the spread of aquatic and terrestrial invasive plants and animals throughout its region. The organization works to increase public awareness and participation and engages volunteers in data collection, restoration and management projects. It gathers and shares information about invasive species. The Friends signed on as an official LHPRISM partner in 2014 and sends a representative to attend its meetings.

High Bridge: Lights, Celebrities, and Celebrations

News continues to flow from the High Bridge following the June 9 ribbon-cutting ceremony that marked the reopening of this landmark crossing. The 1848 bridge carried Croton water across the Harlem River to Manhattan and for decades hosted throngs of visitors until its 1970 closing.

The Friends had an amazing, exhilarating day at the High Bridge on July 25, participating in the kickoff of festivities for NYC Parks' Season of the High Bridge. A nearly endless stream of people stopped at our table, which was well-located next to the long stairway down to the Manhattan end of the bridge. Many visitors joined our guided bridge walks, led about every half hour in turn by Sara Kelsey, Lesley Walter, Mavis Cain, Bob Kornfeld, Carl Grimm, Tom Tarnowsky, and Charlotte Fahn, who also took turns at the table.

The Parks Department reports about 6,000 visitors that day, strolling the pedestrian bridge and viewing the surrounding cityscape of river, roadways and ramps, rail lines and skylines, and green parklands. During the summer hundreds or more crossed the bridge daily from the Bronx to reach Highbridge Pool at the Manhattan end, quick and easy access unavailable for the 45 years the bridge was closed. There is now a steady stream of runners and walkers getting their exercise, bike commuters, visitors coming solely to see the bridge, and neighborhood residents who use it as one of their local parks.



*Crowd on the High Bridge on July 25.
Photo by T. Tarnowsky*

Among the visitors were two proud “daughters of the Bronx” who arrived together to view the bridge: Supreme Court Justice Sonia Sotomayor and Sonia Manzano, recently retired as Maria on “Sesame Street.” In an August 3 NY Times article, Justice Sotomayor remarked “Hopefully, for the next generation of kids it will be the place to get engaged. . . . Others will have their first kiss and others will find it a place to share.”

The High Bridge is also lending a new, stunning night-time presence to the Harlem River corridor. A photo in our last issue, no. 49, showed the steel arch over the water brilliantly outlined in decorative and environmentally friendly LED “button” lights; these are installed on both north and south sides of the arch. Now, soft uplighting – visible from the north and south - has been added to subtly illuminate the undersides of the granite arches on the Bronx side.

By day, NYC Parks holds events and programs involving the Highbridge parks and the bridge: a 5K Adventure Race, a bridge-making workshop for kids, a naturalist-led hawk watch, and - as part of the first citywide Fall Field Day-pillow polo, egg relays, the Big Apple Circus, and much more. Field day brought thousands to High Bridge for the first time.

Note: The bridge's current hours are 7am to 7pm. For directions, please visit www.aqueduct.org/Maps & Access. —C. Fahn

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Your tax-deductible contribution helps to protect and preserve the trail.

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| <input type="checkbox"/> Additional donation to Keeper's House Fund \$_____ | |

Please make check payable to Friends of the Old Croton Aqueduct. Send it with this coupon to the Friends at Keeper's House, 15 Walnut St., Dobbs Ferry, NY 10522-2109.

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Please let us know if you would like to volunteer:

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| <input type="checkbox"/> Cleanups | <input type="checkbox"/> Vine-cutting |
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| <input type="checkbox"/> Graphic design/signage | <input type="checkbox"/> Newsletter articles |
| <input type="checkbox"/> Lead (or assist with) walking tours | |
| <input type="checkbox"/> Outreach on the trail (meet and greet) | |

We need your help.

Aqueduct Gems, Above Ground and Below

Above ground, the Keepers House looks gorgeous in its new finery: its coats of paint inside and out and welcoming lighting. The house has several medallions, a reminder of a bygone era. One can be seen as you walk up the porch steps and into the house. Medallions were popular during the 1830s through the 1890s. When they were meant for the center of the ceiling with a hanging light fixture, they were sometimes called “centers.”

Below, the Aqueduct tunnel, an architectural gem unlike anything built at that time, is virtually untouched. As far as we know, it is basically as John Jervis, chief civil engineer, built it in the 1830s. As he says in his memoir, the “Croton Aqueduct was an improvement for which there was no specific experience in the country or hardly any in modern times.” Jervis was very concerned about safety and rejected the use of quick lime in the tunnel instead of the more expensive hydraulic cement which is used even today to seal structures. Recounting his disagreement with the board of commissioners over his specifications, he said, “It (lime) was no doubt a cheaper material but did not appear to me as affording the best security for the work, and if the board insisted on its use, *they* must assume the responsibility of the measure.” This closed the discussion, he said. We are indebted to Jervis for his foresight and insistence.

In the 1974 National Historic Register designation report, the aqueduct is described as “constructed of brick



In the front room of the Keepers House, a newly repaired medallion. Photo by T. Tarnowsky

by cut-and-cover methods. The foundation of the tunnel is formed with concrete, the side walls of stone, the bottom and sides of the interior are faced with brick and the top is covered with an arch of brick.”

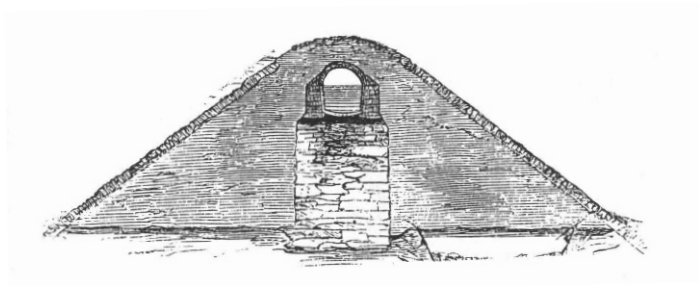
— Ruth Gastel



Photo of the Aqueduct in the Ossining weir, showing the bricks still intact. Photo by Tzvi Filler

Friends of the Old Croton Aqueduct
Keeper's House
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Newsletter: Ruth Gastel, *Editor*. News items, reminiscences, and comments welcome: 914-479-1414 or ruthg@iii.org or by mail c/o the Friends.

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Friends Board Member Lesley Walter in her amazing ventilator hat on the High Bridge. Photo by C. Fahn

Friends of the Old Croton Aqueduct is a private, non-profit, volunteer organization formed to protect and preserve the Old Croton Aqueduct. The Friends work to raise public awareness of the Aqueduct and trail, and to secure the resources that will enable this historic greenway to remain unspoiled in perpetuity. *Address:* Keeper's House, 15 Walnut St. Dobbs Ferry, NY 10522-2109; *telephone* 914-693-4117, www.aqueduct.org.

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