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Yale SCHOOL OF FORESTRY &
ENVIRONMENTAL STUDIES



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YALE SCHOOL OF FORESTRY & ENVIRONMENTAL STUDIES



GREEN INFRASTRUCTURE GROWS IN NEW HAVEN

by Matthew Viens

Those who have been following URI's progress over the past year-plus, or who live and work in New Haven, have probably noticed more and more bioswales cropping up throughout the Downtown area. These bioswales—engineered gardens designed to collect rainwater runoff right from the street and sidewalk—are part of a larger undertaking to expand New Haven's green infrastructure network, reduce flooding, and lower demand on the existing storm-sewer system.

Since we last wrote about bioswales in Fall 2018, the URI team has been working on many additional installations in the Downtown and Hill neighborhoods. Along with partners from the City of New Haven, EMERGE

CT, Inc. and the Yale School of Forestry & Environmental Studies, the team has now built a total of 100 individual bioswales, completing the first phase of work funded through a federal grant. In this process of scaling up, we have learned a lot—both in terms of stormwater management and engineering as well as local, place-based history.

One of the more compelling aspects of the project was a partnership with local archaeologists, required as part of the grant due to New Haven's deep historical roots. Through this collaboration, the team uncovered numerous old bottles (some intact and dating back more than 100 years), ceramics, shell middens, animal

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FROM THE DIRECTOR



This summer marked the 25th year of the Community Greenspace program working with volunteers to address their environmental concerns. This milestone, as well as celebrating our tenth year of partnership with EMERGE to provide green job opportunities to adults with a history of incarceration, offers a natural moment to reflect on URI's accomplishments.

Of most discernible achievement are the 8,764 trees planted by thousands of Greenspace volunteers and over 600 GreenSkills interns (166 adults and 450 high school students). Focusing solely on numbers, though, fails to capture the bigger picture. Remarkably, our program has planted nearly 1/3 of all of New Haven's current street trees. We've counted. These trees produce results that will incalculably benefit our community for years to come. Less obvious but arguably even more beneficial is the invaluable experience neighbors gain improving their neighborhood, as well as the opportunity for formerly imprisoned people to successfully return to their families and recover their personal freedom.

Another crucial metric is the improved technical capability at URI, as well as the growing strength of community groups. In the cover story, GreenSkills Manager Matt Viens describes our progress in diverting stormwater runoff by building attractive and effective bioswales across downtown. We have scaled up from our first experimental one in 2013 to building 100 this past year as part of our broadened GreenSkills training.

A further example of our developing Greenspace program is addressing solid structures. In 2019, with state funding and an incredibly generous individual donation, we installed three classic cast iron and wooden benches, a half-mile of new trails, a wooden pavilion at Cherry Ann Park, and next year we'll place a splash pad there. This fall at East Rock Park we will repair the dilapidated railing of the Giant Steps and lengthen a new trail at Beaver Ponds Park, along Sherman Parkway.

Finally, the resolve of some Greenspace groups to raise funds (with URI acting as their fiduciary) and use the resources they have re-

ceived to pay for special programming, such as goats munching on invasive plants for months at a time in Edgewood Park, is more than heartening.

In September, during our annual reception at Lighthouse Point Park to thank Community Greenspace volunteers for their stewardship efforts, Deputy Director Chris Ozyck pronounced milestones reached by different groups: Friends of Oyster Point 19 years, Shepard Street 21 years, Watson & Bassett 24 years and Orchard Street Clean-Up team 15 years, among about 40 more groups. These volunteers show not only steadfast and ongoing commitment to concentrate on their specific neighborhood projects, but many have also come together for decades to attend annual events like training workshops, the bus tour, and the celebration at Lighthouse, with the latter two feeling more like family reunions, as neighbors from across the city greet each other with joyful hugs.

 Colleen Murphy-Dunning

SAVE THESE DATES!

Social and Ecological Infrastructure for Recidivism Reduction

March 12 - 15, 2020 | 3:00 - 5:00 p.m.

195 Prospect Street, New Haven, CT 06511 | <https://www.prisonergardenjustice.org/>

URI is co-convening this national conference with Boston College. The conference will bring together researchers, practitioners, community leaders, and policy makers who work at the intersection of correctional programs, community-based interventions and ecological sustainability.

The conference will feature some of the videos created by the 2019 spring tree planting crew from EMERGE to tell their stories. These videos were made possible by a grant from The Robbins-de Beaumont Foundation and are available for viewing on our website: <https://uri.yale.edu/news-videos>

12th Annual Rock to Rock Earth Day Ride

April 25, 2020

New Haven, CT

Join us in a community celebration of the 50th Earth Day as we bike from Common Ground High School in West Rock Park to East Rock Park! We invite you to join our team as a rider or volunteer to help raise funds for URI's GreenSkills tree-planting and Community Greenspace programs. Early bird registration will open in December 2019 at www.rocktorock.org.

Green Infrastructure Grows in New Haven

by Matthew Viens (continued from page 1)

bones and pipe stems—relics from the city's earlier inhabitants. Flecks of characteristically shaped stone, noticeable only to the highly trained eye, pinpointed the construction and use of stone tools by the area's Native American ancestry. Larger finds included the unearthing of an old brick sidewalk and the façade of a Post Office building that formerly stood at the intersection of Elm and State Streets, now the home of New Channel 8, as well as what is believed to be an old cistern on George Street near Church.

We also developed a keener understanding of New Haven's geologic history—a past that has included shifting rivers, glaciation, and centuries of other weathering and sedimentation processes. Over time, these forces have worked to create very sandy soil under much of New Haven, making it an ideal place to install bioswales and leverage the intrinsically high rates of drainage and infiltration. Sometimes, though, geologic history can lead to some notable exceptions to all that sand. Where George Street currently runs, between Church and State in the vicinity of the old New Haven Coliseum, there is believed to be a historic riverbed. Rounded rocks, worn down by many years of now-stopped river water and marking the bed and banks of the old river, choked the ground alongside George Street. This not only made digging extremely difficult, but it painted a picture of what was once a very different coastline.

Beyond uncovering important historical and physical context, our team broadened its knowledge of the construction and capabilities of bioswales themselves. Overall, four URI staff members and 19 EMERGE crew members honed skills in stormwater engineering, general construction practices, worksite safety, and planting selection and maintenance. Dr. Gaboury Benoit of the Yale School of Forestry & Environmental Studies,



Uncovering an old brick sidewalk and the foundation of a former Post Office facility on Elm Street.

working with a small team of Yale graduate students, conducted research on the efficacy of the new bioswales. Early results show that areas where bioswales have been built are seeing a 75% reduction in rainwater runoff flowing through the storm-sewer system. This suggests fewer flooding and downstream



Artifacts like bottles, inkwells, ceramic fragments and tobacco pipes offer clues into the area's past.



A bioswale in full bloom at the intersection of Dwight and Chapel Streets.

pollution events following bioswale construction. Dr. Benoit's research has also confirmed the prevalence of well-drained, highly permeable soils throughout the Downtown area, indicating that additional bioswales are likely to have success in further reducing sewer flow following a storm event.

Given the scope of this work, New Haven has now become a learning hub for cities of a similar size throughout the Northeast. Nonprofit organizations based in Hartford, Bridgeport, Providence, and Boston have asked to observe our installation crew in action and learn from our experiences in an effort to guide and inspire their own local green infrastructure efforts.

Looking ahead, we hope that New Haven will not only serve as a model and resource for other cities throughout the region but that we will continue to broaden the reach and impact of green infrastructure locally. In this vein, the City plans to award maintenance contracts for all existing bioswales, ensuring that this novel system continues to look vibrant and perform at peak functionality. We also host groups of interested Yale students

and local residents on informal tours of the bioswales in an effort to increase awareness of these non-traditional methods of water management and coastal resilience.

URI will next shift its focus to install an additional 75 bioswales in New Haven's Hill neighborhood. These locations will be in the vicinity of critical infrastructure, such as Yale-New Haven Hospital, Union Station, and the City's Police Headquarters facilities. The aim is that not only will this project continue to provide meaningful employment and skill development for a number of individuals as well as beautify the local streetscape, but will position New Haven to be more resilient against the expected impacts of future climate change.

If you are interested in learning more about the bioswale program and staying informed about upcoming work, please visit the URI website at uri.yale.edu. The installation crew would also be more than happy to share technical information and lessons learned firsthand. Make sure to stop by if you see us in the field during the coming months!

Small Ideas, Big Change

by Jamie Chan

For me, 2019 has been a year of politics and plants. Election season kicked off with the New Haven mayoral race along with national presidential campaigns, leaving us with no shortage of ambitious promises. It's always invigorating to hear politicians' next big idea to address our most pressing issues, from the job crisis to criminal justice reform. Enthralled as I am about their bold plans for progress, I can't help but falter in my optimism. Even if we all go to the polls, what happens when the candidates we believe in don't end up in office? Where then do we turn for our communities' well-being? When political representation does not reflect our interests, how else do we push for change?

Interestingly, I found some answers this summer through planting. As an intern with URI's Greenspace Program, I assisted community members with their projects to green up the neighborhood. Over the course of three sweltering months, URI volunteers came together in spite of the heat to weed, mulch, and plant in green spaces all across New Haven. For some groups, this was their first summer working together. Others had been stewarding the same site for over two decades. Some sites were acres wide; some were no larger than a road median. Regardless of the group's size or form, I saw the visible impact of their community-organizing in the stunning transformations of these Greenspaces. Working at a park, as minor as it may seem, can be a catalyst for big change.

Long-time resident of Cherry Ann Street Connie Vereen knows this well enough. The street leads to a dead end for cars but opens up to a huge expanse of vegetation that is Cherry Ann Park. Standing among the wildflower fields, swing sets, and the recently constructed pavilion, I have difficulty imagining a time when the park did not exist. Yet Miss Connie, as the neighborhood children affectionately call her, remembers distinctly when the park

was a dumping site just six years ago, neglected by the city. Frustrated by the city's inaction to address the problem, Miss Connie decided to enlist URI's help to do it herself. Gradually, the weedy overgrowth was removed and supplanted with native species. The environment was restored into a certified urban oasis where wildlife can seek habitat refuge within the built structures of a city. The tireless work of volunteers and neighborhood children has kept the park in good shape for nearby families and students to enjoy.

Farther down the road is Beaver Ponds Park. No stranger to recognizing the uniting power of gardening, Nan Bartow has been the fearless leader of the Greenspace group Friends of Beaver Ponds Park (FoBPP) for 15 years. The park used to be a web of unmaintained foliage that nobody could get through. Just like Miss Connie, FoBPP decided to take matters into their own hands by fixing up the park themselves. Over the years, invasive vegetation has been cut down while the number of volunteers has gone up. FoBPP now yields one of the highest participation rates out of all Greenspace groups, with 15 to 20 volunteers showing up every workday rain or shine. Key to this success is Nan's ability to build community around tending the park. Every season begins and ends with a potluck at her house to welcome new folks and to recognize each other's contributions. From June to August, FoBPP removed the yearly return of weeds that obscures the view of the pond. Yet the seemingly never-ending work of weeding and pruning is made enjoyable when done with friends.

Crucially, it is stewardship that keeps all this work going. In the Cedar Hill community, Betty Thompson is known as a formidable force. Along with the late Rebecca Turcio, the two were partners in crime advocating for neighborhood improvement. They started the Cedar Hill Greenspace group in 2004 to maintain three mini roadside sites. Due to



Greenspace group leaders including Nan, Betty and Connie attending a fall bulb planting event at URI.

their size, they are easy to overlook. Indeed, many drivers pass by without giving a second glance, taking these well-pruned flower arrays for granted. However, whenever we worked on Betty's Median in the middle of a two-way road, many slowed down to express their gratitude toward Betty and her family for keeping the neighborhood beautiful. The Cedar Hill Greenspace group's unwavering leadership does not go unnoticed. In July, the group planted a memorial tree for Rebecca, who passed away last year. A Yoshino cherry tree now graces Rice Field as a reminder of her dedication. And to honor Betty's years of activism, the intersection of Rock and Grace Streets was named "Ms. Betty Thompson Corner." Every year, despite her age and ailments, Betty still shows up on summer workdays without fail, her daughter, granddaughter, and great-granddaughter in tow.

These Greenspaces are more than just patches of greenery. When the public spaces around them were not cared for properly, Betty, Nan and Miss Connie did not wait for the next elected official to help—they organized their communities to take action. Greenspaces, in that way, are a form of resistance. We may not associate gardening as the "next big idea" to better our society, but shoveling dirt inspires agency in people to enact change on their own terms, quite literally planting the seed for larger social action. Politics emphasizes big ideas, which often means that the wide-reaching, even intergenerational, impacts of small ideas slip through the cracks. I encourage us all to look into the cracks, to recognize our own change-making abilities, and to notice and appreciate the flowers.