New York City Urban Field Station
2012 Accomplishment Report

The New York City Urban Field Station's mission is:

To improve quality of life in urban areas by conducting and supporting research about social-ecological systems and natural resource management.

The NYC Urban Field Station (NYC UFS) is both a physical place to conduct research and a network of relationships among scientists, practitioners, and facilities focused on urban ecology. The NYC UFS is sustained through a core partnership between the USDA Forest Service Northern Research Station and the NYC Department of Parks & Recreation. Since its founding in 2006, the NYC UFS has engaged non-profit, academic, and government partners creating innovative "research in action" programs to support urban ecosystem management and sustainability initiatives in New York City.

Urban Waters: Woodsy Owl and Friends 'Celebrate Highbridge' and paint murals celebrating the Harlem River.

In 2012, the NYC UFS staff and partners continued to support science and science-based programs, hosted more than 50 visiting scientists and students at Fort Totten, and delivered presentations celebrating urban ecology over 20 conferences throughout the country.

At the NYC UFS, we pursue diverse lines of research on urban social-ecological systems—the complex mix of living and nonliving things and processes that make up our cities:

- Our health and well-being research examines the linkages between built, natural, and human systems in New York City and beyond.
- The NYC UFS continues its multi-year engagement with the MillionTreesNYC campaign and the Freshkills landfill to park conversion project, participating in several research and evaluation studies on these initiatives.
- Stewardship is a core focus of our research via the STEW-MAP study in NYC that is being replicated in Chicago, Seattle, Baltimore, and—most recently—Philadelphia.
- Our research drills down to examine biophysical processes and social structures surrounding different site types citywide, including: parks, the public right of way, community gardens, and natural area restoration sites. NYC UFS researchers are conducting a longitudinal study of community gardens in New York City and were also engaged in guest editing a special issue on community gardening for the journal *Cities and the Environment.* Research on Parks' natural areas examines tree health and long term outcomes of forest restoration practices.
- Urban biodiversity research creates new knowledge about fauna in New York City, including salamanders, white tailed deer, oystercatchers, sparrows, and dragonflies.

Below please find science highlights from 2012. For more information, visit our updated website at http://nrs.fs.fed.us/nyc/.

Research Updates

Health and Well-Being

Community Resilience: USFS researchers continued collaboration with Keith Tidball (Cornell University) on disaster, resilience, and community greening research through a planning grant from the TKF Foundation, a private nonprofit that funds publicly accessible urban green space. The project, entitled "**Landscapes of Resilience: Understanding the Creation and Stewardship of Open Spaces Sacred Places**" focuses on the tornado that struck Joplin, MO in 2011 and the economic decline in Detroit, MI and the resilience and rebirth demonstrated in community greening activities in both cities. The research team including Erika Svendsen, Lindsay Campbell, Nancy Falxa-Raymond (USFS) and Keith Tidball traveled to Joplin and Detroit this year to investigate how the processes of collaborative planning and stewardship of open spaces can support recovery from a wide range of human, natural, technological, and political disasters. See http://civicecology.org/tkf.php for more details.

Neighborhood Health: Jacqueline Lu and Kristy King (NYC Parks) have completed collaborative research on a project entitled "**The Urban Forest, Childhood Asthma and Community Air Quality**" with the New York City Department of Health and Mental Hygiene, Columbia University, the University of Vermont Spatial Analysis Lab, and Queens College's Center for Natural and Biological Systems, led by PI Andrew Rundle (Columbia University). Funded by the National Urban and Community Forestry Advisory Council, this project investigates the complex relationship between changes in the urban forest, the onset of asthma in children living in the Bronx and Northern Manhattan, and local air quality. This summer two USFS Davis weather stations were installed in NYC to gather additional meteorological data. Collaboration with our partners and new data from the NYC Community Air Survey will help to enhance urban heat island mapping and models for the city. Publications on methodology and findings are forthcoming in the *Journal of Arboriculture & Urban Forestry* and *Environmental Health Perspectives*.

Green, Grey and Human: This year, USFS researcher Erika Svendsen began a new collaboration with Mary Northridge (*American Journal of Public Health*, New York University) and Sara Metcalf (SUNY Buffalo-Geography), establishing a systems framework that highlights **critical relationships between grey and green elements of cities and human health and well-being**. By understanding the underlying structure of urban spaces and the importance of social interactions, urban planners, decision makers, and community members can capitalize on opportunities to leverage resources to improve health equity and well-being. The team has published its first 'think piece' in a special issue of *Cities and the Environment*. This work was presented at The Collaborative on Health and the Environment's 2012 Conference, Healthy Environments Across Generations at the New York Academy of Medicine. This year, the team will continue to research and write within the fields of urban planning, geography and public health.

MillionTreesNYC Research and Evaluation

Deep Roots: MillionTreesNYC (MTNYC) is a citywide, public-private initiative with an ambitious goal: to plant and care for one million new trees across the city's five boroughs by 2017. Engaging and educating the public to protect and steward trees is a complex but essential task to ensure the survival of New York City's trees, and Ruth Rae (NYC Parks) is conducting an evaluation of the initiative to improve the effectiveness of MTNYC's tree care stewardship programs. She is helping MTNYC staff to redefine indicators and redesign forms to capture data critical for long-term program management and on-going research. Lindsay Campbell's (USFS) doctoral research examines the politics, discourses, and practices of urban forestry in New York City in the time of PlaNYC. For more information, visit www.milliontreesnyc.org.

Assessing Survival on MillionTreesNYC Reforestation Sites: Brady Simmons (NYC Parks) continued a study, now in its fourth year of data collection, to monitor the success of the MillionTreesNYC reforestation effort. Fifty-two Parks citywide have over 450 permanent plots installed, a number which will continue to grow as the acreage of reforested areas increases. The plots are sampled on a staggered schedule which focuses monitoring on the first three years in the ground. This study aims to understand the relationship between the resilience of young container trees and variables such as urban soils, planting season, vandalism, and planting staff. Soil samples from the areas planted in fall 2007 were collected during the 2012 field season, concluding the field portion of the urban soils work.

Timon McPhearson of The New School's Tishman Environment and Design Center (TEDC) and Matthew Palmer of Columbia University are leading a city-wide multi-year study on the **Effects of the MillionTreesNYC Forest Restoration Efforts on Urban Ecosystem Structure and Functioning.** Eleven permanent research sites in nine parks across the city have been implemented in collaboration with NYC Parks since 2009. This research examines the dynamic interactions between vegetation, soils, and management practices and how they change over time, focusing on ecosystem structure and function as well as species diversity and abundance. Study results have been integrated into an "Urban Ecosystems" undergraduate course at TEDC and three student theses. Results of the study were presented at annual meetings of the Society for Ecological Restoration, Ecological Society of America, and Association of American Geographers, and at the 4th International EcoSummit. The research team is funded through TEDC with additional support from the Eppley Foundation for Research.

Stewardship Mapping

STEWMAP Goes Multi-City: Stewardship is one of the means by which civic groups contribute to urban sustainability efforts by conserving, managing, monitoring, advocating for, and educating the public about their local environments. STEW-MAP is both a set of scientific studies of urban stewardship networks as well as publicly available online tools to help support those networks. This year, the STEW-MAP team continued to expand the project's geographic reach as well as its products and platforms.

A new online portal (http://stewmap.net/) provides information about STEW-MAP projects in New York City, Chicago, Baltimore and Seattle, including maps, network diagrams and publications to date. Researchers from the multi-city team are working on a STEWMAP 'how to' publication and continue to present and publish new findings, including Fisher, Campbell and Svensden (2012) in *Environmental Politics* and Connolly, Svendsen, Fisher and Campbell (2012) in *Landscape and Urban Planning*, and a presentation by Nancy Falxa-Raymond (USFS) at the annual conference of the US Chapter of the International Association of Landscape Ecologists in Newport, RI. This work is funded by the National Science Foundation and the US Forest Service.

Freshkills Park

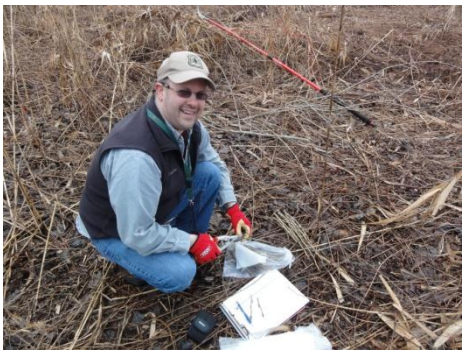
Restoration and Research: In May 2012, the Fresh Kills Administrator, Eloise Hirsh, held a roundtable session for the Freshkills Park Alliance focused on how the park should inform and promote environmental research and ecological restoration. The NYC UFS participated in this lively session and continued **three collaborative research projects with Freshkills Park**, which is currently the largest landfill to park conversion in the world. For more information on Freshkills, visit: www.nycgovparks.org/park-features/freshkills-park.

- "**Attitudes towards and Intentions to Visit Freshkills Park**" is led by David Klenosky of Purdue University with cooperators Christine Vogt (Michigan State University), Stephanie Snyder (USFS), Herb Schroeder (USFS, now retired), Rich Flanagan and Deborah Popper (College of Staten Island), and NYC UFS and Freshkills Park staff to develop a large scale, quantitative assessment of Staten Island residents' attitudes towards the park. Using data from this study, students in the 2012 Columbia University Master of Science in Sustainability Management

Capstone Workshop developed a communications strategy to address public health concerns surrounding Freshkills Park.

- **"Legacies of the Dump"** is a qualitative research project using focus groups to gather data about Staten Island residents' memories of the landfill and their perceptions, fears, and interests in using the future Freshkills Park and is coordinated locally by Urban Field Station and Freshkills Park staff. Lindsay Campbell (USFS) and Carrie Grassi (formerly with NYC Parks Freshkills team) presented the research at *The City and the Senses* conference held at Drexel University on June 6, 2012. Campbell presented the research at the CUNY Center for Urban Environmental Reform's first annual conference on *Regulating the Urban Environment* on June 26, 2012.

- "**Improving Ecosystem Health and Functioning at Freshkills Park through Phytotechnologies"** is led by Ron Zalesny (USFS) as well as Urban Field Station staff and Freshkills staff from NYC Parks and Sanitation departments. The first step in this process is to identify and propagate "workhorse" species belonging to the *Populus* (poplar), *Salix* (willow), and *Panicum* (switchgrass) genera. In March 2012, Ron Zalesny came to New York City to collect initial plant material from native Staten Island populations with the help of Rich Hallett and Nancy Falxa-Raymond (USFS). Now, Zalesny is conducting greenhouse studies at the USFS NRS Institute for Applied Ecosystem Studies in Rhinelander, WI using a process called phyto-recurrent selection. The long-term goal is to select and establish the most successful genotypes that can help improve soil quality and other aspects of ecosystem health throughout Freshkills Park and to then conduct field trails via another round of phyto-recurrent selection.



Phytotechnologies: Cutting up Freshkills poplar twigs for propagation.

Community Gardening & Urban Agriculture

Special Issue: The **September 2012 issue** **of *Cities and the Environment* (CATE) is dedicated to the American Community Gardening Association's 32nd Annual Conference**. The issue features select proceedings from the annual conference—"Community Gardening Works!"— held at Columbia University in New York City. The peer reviewed articles cover a variety of research on the history, current practice, and future of community gardening and urban agriculture and was guest edited by Nancy Falxa-Raymond (USFS) and researcher Caroline Mees. In particular, the special issue includes a research note from NYC UFS scientists introducing their longitudinal study of community gardeners and gardens in New York City and an article from GreenThumb's Director, Edie Stone and her collaborator, Caroline Mees Continuing the dialogue on the changes in the urban landscape.

Lindsay Campbell (USFS) presented on her dissertation research at 2012 Urban Affairs Association conference in Pittsburgh, PA. She participated in a colloquy entitled: "**The Green Growth Model? Farming, Greening, and Rethinking the Urban Landscape**" along with researchers Hamil Pearsall and Tina Rosan of Temple University and Yuki Kato of Tulane University. You can read more about USFS research on urban agriculture and community gardening in NYC here: http://blogs.usda.gov/2012/12/19/gardening-farming-take-root-in-new-york-city/.

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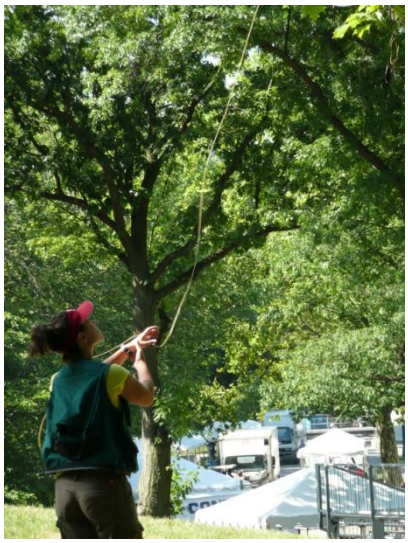
Natural Areas Restoration

New York City Afforestation Project: Rich Hallett and Nancy Falxa-Raymond (USFS) continued collaboration with Yale University researchers Alexander Felson, Mark Bradford, Mark Ashton, Emily Stevenson, and Robert Warren II to investigate the sustainability of constructed, native, urban forests and their resilience to invasive species. Researchers continue to track recruitment from the planted, native vegetation as well as the proliferation of invasive plant species and are investigating the impact of planted species diversity and organic amendments on these processes. This year, wood stakes were installed at the MillionTreesNYC research site in Kissena Park as part of a national study of soil organic matter decomposition and soil productivity led by Mary Beth Adams (USFS), Deb Dumroese (USFS) and Marty Jurgensen (Michigan Technological University).

NYC Parks ecologists continued a study of salamanders, birds and spring ephemeral herbs as **indicators of urban restoration success** begun in Inwood Hill Park in 2003. In 2012, NRG ecologists added a new site to ongoing studies of the effects of invasive species and forest restoration on forest flora and fauna in Buck's Hollow, a section of the Staten Island Greenbelt. The area slated for a large forest restoration is a patch of degraded habitat within high quality forests with sensitive wetlands and stream-breeding salamanders and plants uncommon in NYC, including American hazelnut *(Corylus americana)*. Staff began vegetation monitoring in 2012 and will collect additional data on birds, amphibians and rare plants in collaboration with external researchers, including Jason Munshi-South of Baruch College (CUNY). Brady Simmons (NYC Parks), along with Nancy Falxa-Raymond and Rich Hallett (USFS), presented on the **long term outcomes of forest restoration** in the Bronx's Pelham Bay Park at the annual conference of the US Chapter of the International Association of Landscape Ecologists in Newport, RI. The study found that canopy cover, basal area, and vertical structure all increased within the restored areas. The shrub and vine layer within the treatments did not have a clear response to restoration. This project is part of a National Science Foundation & Forest Service-funded ULTRA-Ex. Falxa-Raymond and Hallett are also working with Clara Pregitzer (NYC Parks) to design and implement a greenhouse experiment examining the **growth response of native tree species** to a variety of urban soil types.

Rich Hallett and Nancy Falxa-Raymond (USFS) conducted a pilot study in Central Park this summer to develop **urban tree health metrics** across a range of important tree species. The methodology is based on Hallett's work on forest health in the northeastern U.S. and adapted to incorporate uniquely urban stressors and forest management conditions with the goal of early stress detection. Key variables include photosynthetic capacity, canopy transparency, dieback, and live crown ratio, capturing and quantifying the full range of decline symptoms, from incipient infestation to final mortality. In a related project, Hallett and Falxa-Raymond used the same field measurements to **quantify ash decline** in emerald ash borer-infested areas of Maryland. Partners in this effort include Morgan Grove (USFS), Jennifer Pontius (University of Vermont), Jarlath O'Neil-Dunne (University of Vermont & USFS), Bruce Cook and Mark Carroll (NASA Goddard). This data is currently being analyzed in conjunction with hyperspectral, thermal, and LiDAR data from the same airborne platform, flown in July 2012. Data from the multiple instruments can be used to enhance our capability of mapping tree species and stress. Mapping the ash resource in the early stages of infestation will allow managers to plan for the removal of ash trees and subsequent replanting.



Urban tree health: Sampling leaf material in Central Park.

Marla Emery (USFS) and Patrick Hurley (Ursinus College) continued their work analyzing interviews with key natural resource managers to understand their perspective on **urban foraging in New York City,** a common practice that is currently not permitted on NYC parkland. NYC Parks ecologists helped Emery and Hurley develop a comprehensive plant list for NYC to help the researchers document the dozens of species of plants and fungi being picked in spaces that include cemeteries, public rights of way, and parks. In addition, collaborator Rich Hallett (USFS) is helping to test foraged plant materials for heavy metals, since little is known about the level of potentially harmful compounds that may be accumulated in plant parts that are being consumed.

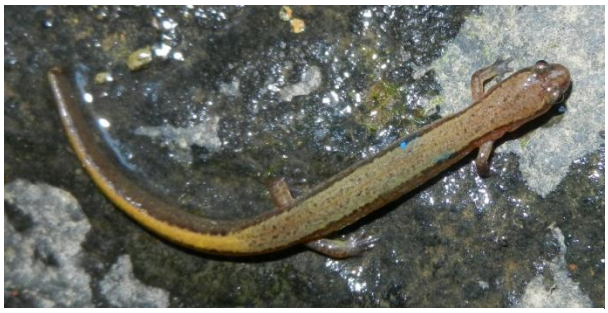
Researchers at the Urban Field Station and NYC Parks' Street Tree Planting staff **continued research on young street tree mortality** in New York City as it relates to a slew of biophysical, social, and built environment indicators. Data collection in Summer 2012 focused on completing inspections of a cohort of 5,000 trees from the original study ranging from 9 to 15 years post-planting in order to extend the knowledge of street tree longevity past the nine-year mark. Jacqueline Lu (NYC Parks) was invited to present on NYC's tree monitoring efforts as part of the symposium "Urban Tree Monitoring for Growth and Longevity" at the International Society of Arboriculture's Annual Conference in Portland, Oregon.

Brady Simmons and Clara Pregitzer (NYC Parks) presented on **urban soils** in parks and conducted a field day at Alley Pond Park for graduate students from Brooklyn College. This visit kicked off a long-term urban soils study and collaboration with Dr. Joshua Cheng's urban soils class. Students collected soil samples at past, present, and future restoration areas, with the goal of understanding **how soils change over time after forest restoration**. Graduate students in future semesters will continue to assess these areas and track changes over time.

Ellen Pehek and Susan Stanley (NYC Parks) contributed to the restoration design and monitoring at Meadow Lake in Flushing Meadows Corona Park. The Natural Resources Group is planning a **shoreline restoration** where invasive common reed (*Phragmites australis)* will be removed and replaced with native vegetation. The Parks ecologists are monitoring vegetation as well as odonates, including a city-rare damselfly species only known from this site.

In response to concerns about the growing population of white-tailed deer on Staten Island, Nate McVay (NYC Parks) and staff from NYC Parks conducted a **deer spotlighting survey** at Freshkills Park, which appears to be a major hub for deer movements among Staten Island green spaces. Combining this study with a future aerial infrared census will greatly inform the development of management strategies and policies.

Urban Biodiversity



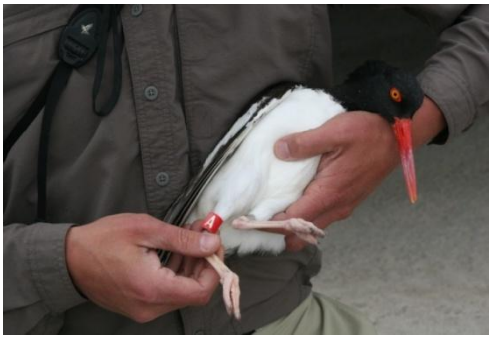
A blue-marked two-lined salamander in the Greenbelt

SUNY ESF student Jimmy MacCarthy interned for Ellen Pehek and Jackie Lu (NYC parks) this summer to work on the **salamander genetics and landscape ecology project,** a collaboration between Parks and Jason Munshi-South of Baruch College (CUNY). The study looks at the effects of historic stream fragmentation and urban development on genetic and population structure of stream salamanders, a bioindicator of ecosystem health. Field work this year focused on collecting tissue from northern two-lined salamanders (*Euryceabislineata*) and additional northern dusky salamander populations, and marking salamanders for estimation of population size and movement among populations. Pehek and Munshi-South currently have a manuscript under review. The American Museum of Natural History's genetics group was added as a partner in 2012, which will allow a greater number of genetic analyses and faster

results. Munshi-South also brought on a new graduate student, Brittney Kajdacsi, who will be doing her Ph.D. thesis on phylogeography of northern two-lined salamanders along an urban-rural gradient.

NYC Parks marked the second year of a study led by Susan Stanley of **urban vernal pools** by comparing sites within the City to those throughout the greater metropolitan region. In order to determine the diversity and abundance of vernal pool fauna, invertebrates and larval amphibians (wood frogs and spotted salamanders) were sampled and amphibian egg masses counted. USFS Wildlife Biologist Tom Biebighauser led a field day to discuss methods and identify sites for future study and trainings. Coordination of forest restoration and wetland teams dedicated to vernal pool research and design will continue in 2013.

Susan Stanley (NYC Parks) partnered with NYC Audubon and Manomet Bird Observatory on **American Oystercatcher banding** at the Rockaways in Queens. This beach-nesting species uses the same imperiled habitat as the endangered Piping Plover, and was identified in the US Shorebird Conservation Plan of 2001 as a species warranting special attention, prompting the formation of the American Oystercatcher Working Group, in which NYC Audubon participates.



Oystercatcher banding in the Rockaways

Parks continues to assess breeding bird populations both in salt marshes and intact forests throughout the city. Territory mapping has been used to assess restoration goals, urban habitat use and population trends. The mapping efforts began in 1992 in the salt marshes of Staten Island and now contain 17 years of data spanning multiple habitats. New York City was once a stronghold for the **Seaside and Saltmarsh Sparrows** (*Ammodramus maritimus* and *A. caudacutus*), and may still have the largest stable populations of these species in the greater metropolitan region at Saw Mill Creek Park on Staten Island. The Seaside Sparrow is listed by New York State as a species of special concern and the Saltmarsh Sparrow is declining throughout the Atlantic Coast. Starting in Fall 2012, Kim Thompson of Columbia University began digitizing past breeding bird data from the Saw Mill site. She will analyze relationships of bird species composition and abundances to landscape variables and NYC Parks' past restoration activities at the site. Alison Kocek, graduate student working with Jonathan Cohen of SUNY-ESF, intensively studied the two sparrow species at Sawmill Creek and other marshes in NYC in 2012, with the help of NRG's Science and Wetland Teams.

Ellen Pehek collected final data for the "**Odonates as Bioindicators**" study of dragonflies, vegetation, and water quality for assessing wetland condition, and preliminary analyses were completed. An additional facet of the project was added in December, when water samples were collected from wetlands that were inundated by Hurricane Sandy in October for comparison to samples from wetlands that were not inundated.

The location of a **rare population of Pycnanthemum**, or Mountain Mint, on Staten Island has received continued attention in 2012. While there have been successful out-plantings from the only parent population of its kind in NYC in an effort to conserve and protect this species, the future of this Pycnanthemum is still uncertain. In an effort to further understand the habitat and taxonomy of this species a contract to do analysis was awarded to Dr. Jay Kelly (Rutgers University) and the resulting publication will greatly influence future conservation efforts.

In 2012, NYC Parks' Greenbelt Native Plant Center launched the **Mid-Atlantic Regional Seed Bank** (MARS-B) with funding from the US Botanic Garden and the National Fish and Wildlife Foundation. MARS-B is a cooperative effort to systematically collect and safely store the region's seed, serving long-term national conservation goals as well as regional needs for land management and restoration. This year's activities included a 2-day meeting of regional scientists and conservationists to set the initiative's goals, five seed collection workshops across the region, and 39

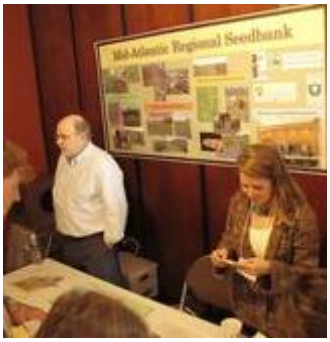
seed collections, as well as the hiring of a Seed Collection Coordinator. A National Fish and Wildlife Foundation grant was secured for the 2013 operations of MARS-B.

Dr. Susannah Lerman of the University of Massachusetts-Amherst was awarded a National Science Foundation Science, Engineering, and Education for Sustainability Fellowship for comparative research between New York City, Boston and Springfield, MA. Susannah's project is entitled "Sustainability begins at home: Understanding linkages between stewardship, urban yards and biodiversity." She will assess wildlife in urban yards and gardens and measure the impact of diverse stewardship practices on **residential yard sustainability and biodiversity**. Private property is an important component of the urban landscape, yet relatively little is known about stewardship practices and biodiversity. Susannah will be working with the NYC team and visiting the Urban Field Station over the next few years to conduct her research.

Outreach, communications, and education

In 2012 NYC Parks issued 63 **permits for research on city lands**, up from 43 in 2011. The addition of a new web-based application form in 2012 seems to have increased awareness of the need for a permit to conduct research in NYC parklands.

The **NYC Urban Field Station Seminar Series** continued this year with quarterly talks covering the topics of ***Forest Restoration*** (Lea Johnson, Rutgers University and Timothy Chambers, NYC Parks); ***Urban Biodiversity*** (Jason Munshi-South, Baruch College and Susan Stanley, NYC Parks); ***Green Infrastructure*** (Stuart Gaffin, Columbia University and Nandan Shetty, NYC Parks); and ***Social-Ecological Resilience*** (Keith Tidball, Cornell University and Erika Svendsen, USFS).



SER Mid-Atlantic: NYC Parks employees from the Greenbelt native Plant center present their work.

NYC Parks co-sponsored, and several NYC UFS staff presented at, the **Society for Ecological Restoration Mid-Atlantic and New England Chapter meetings** in Brooklyn College: Nate McVay (NYC Parks) presented his work with saltmarsh sparrows at Sawmill Creek Preserve, Nancy Falxa-Raymond (USFS) presented work on leaf nitrogen characteristics as NYC forest restoration sites.

Urban Natures: Swiss chard and a skyline view atop the Brooklyn Grange

On October 5-6, scientists at the NYC UFS partnered with Rutgers University's Department of Geography to co-host a Conference on **"Urban Natures."** As part of the event, fifty professors and students toured sites of restoration, open space development, and urban agriculture across NYC. Tours began at Freshkills Park, continued at Brooklyn Bridge Park, and ended at the Brooklyn Grange rooftop farm in the Brooklyn Navy Yard, which is managed by a for-profit firm that is intensively growing vegetables for sale. This year's conference organizers were Dr. Richard Schroeder of Rutgers and Lindsay Campbell (USFS) who is a doctoral candidate in geography at Rutgers. Erika Svendsen and Nancy Falxa-Raymond (USFS) also participated, presenting research on stewardship mapping (STEW-MAP) and longitudinal research on community gardens.

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Urban Waters: During October, NYC UFS scientists participated in a weeklong **Celebration of the Harlem River**. During the week, Nancy Falxa-Raymond assisted conservation educator Tamberly Conway (USFS) with an educational water cycle activity for local South Bronx middle school students. At the weekend's culminating "Party on the River," Erika Svendsen and Lindsay Campbell (USFS) joined in to help with an educational mural painting activity for local residents. Rich Hallett (USFS) gave a logrolling demonstration followed by a wood chopping demonstration by the SUNY Cobleskill Woodsmen team. The group hosted a visit from Forest Service mascot Woodsy Owl, who taught youth the "Rubbish Rot Rap" about recycling, reducing, reusing, and composting. The week's events were led by the Harlem River Working Group and supported by members of the Urban Waters Federal Partnership Harlem River pilot location (National Park Service, US Geological Survey, Environmental Protection Agency and US Forest Service).
In 2012 the **Woodland Salamander Monitoring Project**, a citizen science initiative, partnered Urban Park Rangers with school teachers for an intensive monitoring of coverboards with both high school and middle school students. Sites were set up in less developed urban forests in Queens and Staten Island to compare results with more heavily impacted parks in Manhattan and the Bronx. Kim Schwab's Ecology and Evolution class for home-schooled students completed monitoring all seven plots in Inwood Hill Park and has started on Van Cortlandt's six plots.

This summer, NYC UFS scientists led students from the Trees New York Young Urban Forester Program (taught by Lucian Reynolds) on a **field trip to Fort Totten**. The program is a seven week urban and community forestry paid internship for high school students. The goal of the program is to encourage interest in environmental careers by increasing students' exposure to the natural environment and directly engaging them in environmental stewardship and conservation activities around three major issues: urban forest conservation, restoration and planning; air and water quality; and invasive species. For more information, visit www.treesny.org.

In July, Susan Stanley (NYC Parks) presented a program on dragonflies to the City Parks Foundation's **Green Girls** summer environmental camp. The goal of this program is to introduce disadvantaged girls to nature through working with female scientists. The dragonfly program took place at Strack Pond in Forest Park and included a presentation on dragonfly ecology followed by instruction in capturing and identifying the winged insects. The girls come equipped with aerial nets and all get to try their hand at catching the winged insects. This program received media coverage in the Wall Street Journal, Star Ledger, Time Warner's Website and local NYC TV station NY1.

Green Girls: Checking out a dragonfly.

For additional information please visit http://nrs.fs.fed.us/nyc or contact:

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