



## USDA Forest Service Northern Research Station NYC Department of Parks & Recreation



### New York City Urban Field Station 2010 Accomplishment Report

#### Background:

The USDA Forest Service Northern Research Station (NRS) and the New York City Department of Parks & Recreation (Parks) have jointly opened the New York City Urban Field Station. The goal of the Urban Field Station is to foster research partnerships that support and promote urban conservation and sustainability initiatives in New York City.

The Urban Field Station's physical home is located at Fort Totten in Bayside (Queens), NY. The facility was officially opened with a ribbon cutting on September 24, 2010 and is currently [receiving applications](#) for residential and lab space for short (3 night to 2 week) and extended (2 week to 3 month) visits. Consider applying if you conduct scientific research, develop and apply adaptive urban natural resource management tools, and/or perform technology transfer to improve human well-being and natural areas in urban regions. The Urban Field Station is designed to be a shared resource for the scientific community, and in the coming year we hope new and existing partners will use it as a resource to deepen their work in New York City and on issues critical to urban areas throughout the country.

The Urban Field Station focuses on:

- **Long-term Research Initiatives.** The Urban Field Station was created in the spirit of the USDA Forest Service's century-old model of experimental forest research stations. Multi-year projects recognize the importance of natural resource management in cities, and embrace urban ecology, stewardship, community development and ecological literacy to support ecosystem management and human well-being.
- **Knowledge Sharing.** The Urban Field Station conducts comparative research and disseminates knowledge throughout other metropolitan regions in the United States and links to a growing of network federal scientists, facilities and university cooperators focused on urban research.
- **Expanding Networks.** The Urban Field Station has engaged over 100 non-profit, academic, and government partners in workshops and symposia, technical consultations, peer-reviewed publications, databases, and tools that support urban ecosystem management and sustainability planning efforts such as *PlaNYC*.





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### Selected Projects and Accomplishments for 2010:

The MillionTreesNYC Research and Evaluation Subcommittee co-hosted “[MillionTreesNYC, Green Infrastructure, and Urban Ecology: A Research Symposium](#).” More than 200 researchers and practitioners gathered at The New School for this 2 day event to watch, listen, and learn from invited speakers, presenters and poster sessions for a total of [55 contributed research projects](#) on urban ecological topics. Eleven papers and twelve posters are available through the electronic journal [Cities and the Environment](#) published by Boston College, the Urban Ecology Collaborative, and the USDA Forest Service.

Conducted research on the National Science Foundation-funded Urban Long Term Research Area-Exploratory grant project entitled “**Understanding the Dynamic Connections Among Stewardship, Land Cover, and Ecosystem Services in New York City's Urban Forest**” in partnership with Lead PI [Dana R. Fisher](#), University of Maryland at College Park; Co-PI [Christopher Small](#), Lamont Doherty Earth Observatory; and Co-PI [Gareth J. Russell](#), New Jersey Institute of Technology. This interdisciplinary research involves conducting multi-scale, multi-temporal, spatial analyses of stewardship group activities and evolution of the urban forest in New York City over the past 25 years, and collecting plot-level data on long-term outcomes of forest restoration efforts. Some highlights from 2010:

- The social science team published a white paper entitled: [Who Volunteers to Steward the Urban Forest in New York City? An analysis of participants in MillionTreesNYC planting events](#). This research was presented to the MillionTreesNYC Stewardship Sub-committee.
- The biophysical team developed a tri-temporal map of land cover change in New York City. The methodology and preliminary findings from this project were presented in Christopher Small’s invited talk “Is New York City Greening?” at the MillionTreesNYC Research Symposium in March 2010.

Hosted **Supporting Success: Making the Transition to Green Collar Jobs** [workshop](#) as part of “[Restoring community Ecosystems in New York](#)”, a program that supports green jobs in urban forestry, horticulture and ecological restoration for graduates of the [MillionTreesNYC Training Program](#) and initiates research on green jobs as pathways out of poverty. The program is supported by Mayor’s Fund to Advance New York City, the New York City Department of Parks & Recreation, the New York Restoration Project, and the USDA Forest Service. The workshop was funded via USDA Forest Service Civil Rights Special Projects funds, and brought together green job staff, trainers, employers and other local partners for panel sessions, roundtables focused on peer-to-peer learning, and a keynote address.

Conducted research on the 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. This ongoing research funded by the [National Urban and Community Forestry Advisory Council](#) 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.

Convened the **New York City LiDAR Workshop** with the [Mayor's Office of Long Term Planning and Sustainability](#) and the [Office of Emergency Management](#). Attendees included representatives from dozens of government agencies and academic institutions who all recognized the growing importance of [Light Detection and Ranging \(LiDAR\)](#) data in support of flood mapping, high resolution land cover mapping, calculating the costs and benefits of [solar panel placements](#) with [other applications](#) in active development.



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Began three collaborative research projects with [Freshkills Park](#), which is currently the largest landfill to park conversion in the world.

- The first study, “**Attitudes towards and Intentions to Visit Freshkills Park**”, is led by [David Klenosky](#) of Purdue University with cooperators [Christine Vogt](#) from Michigan State University, [Stephanie Snyder](#) from NRS-9 in St. Paul, MN, [Herb Schroeder](#) from NRS-9 in Evanston, IL, [Rich Flanagan](#) and [Deborah Popper](#) from the College of Staten Island, and Urban Field Station and Freshkills staff to develop a large scale, quantitative assessment of Staten Island residents’ attitudes towards the park. This study builds off of Klenosky’s previous work conducted in the Calumet area of Illinois and will derive predictive models of visitation at Freshkills Park. Also of note: these collaborators were among the first overnight visitors at the Urban Field Station.
- The second study, “**Legacies of the Dump**”, is a qualitative research project that uses focus groups to understand 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. Anticipated outcomes of these two linked social science studies include improved understanding of local park perceptions, which will inform messaging in the near term and site programming in the long term.
- The third project “**Integrated Phytoremediation Buffer Systems at Freshkills Park**” is led by [Ron Zalesny](#) of NRS-13 in Rhinelander, WI in collaboration with [Joel Burken](#) of Missouri University of Science and Technology, and Urban Field Station and Freshkills staff. Phytoremediation is a technology that utilizes natural plant processes and soil amendments to improve and stabilize soil, sediment, sludge, or groundwater that has been compromised or degraded in some way. This project is in the early stages of development and focuses on developing a better understanding of which native species are the best choices for inclusion in an integrated phytoremediation buffer system in the NYC urban environment.

Published a Site Assessment Tools document and a [peer reviewed article](#) from the [Young Street Tree Mortality Study](#), which was developed by Urban Field Station staff along with collaborators from Rutgers University and Parsons, The New School for Design. The Site Assessment Tools document contains detailed methodologies for replicating the study, and was applied this year by practitioners in Pittsburgh. As an unprecedented analysis of biophysical, social, and urban design factors at a scale beyond that of much other street tree mortality research, the findings of this study have already influenced the policies of New York City’s urban forest managers and are guiding the way other cities’ municipal foresters measure the survivability of their street trees.

Provided data downloads from the [Stewardship Mapping and Assessment Project](#) (STEW-MAP) database. STEW-MAP data have been requested and utilized by the Mayor’s Office of Long Term Planning and Sustainability, the NYC Department of Environmental Protection, MillionTreesNYC, and Parks. Updates to the STEW-MAP online [publicly accessible database](#) are nearing completion, which will include additional groups working with the Harbor Estuary Program.

**Dragonflies as bioindicators** – Parks’ scientists are attempting to determine whether dragonfly assemblages act as effective bioindicators for wetland health. Results from a pilot study show that disturbed wetlands have an assemblage of common dragonfly species, while more pristine wetlands have less common species including the dot-tailed and Hudsonian whitefaces. In 2010, Parks’ scientists expanded the study to include stormwater detention ponds. Preliminary results show that dragonfly diversity is lower at the detention ponds than at natural ponds. Two common, tolerant, species were more dominant at detention ponds, but all other species had a greater representation at natural ponds.



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**Assessing Survival on MillionTreesNYC Reforestation Sites** - Natural Resources Group (NRG) is leading a large-scale, citywide reforestation effort as part of the MillionTreesNYC goal to plant one million trees in sites across the city by 2017. A tree survival study was developed by NRG ecologists to accompany this large scale environmental restoration effort. This study addresses the basic survivability and health of the container trees since planting began in the fall of 2007 by in-house staff, volunteer groups, and contractors. Thirty five parks were included throughout the five boroughs. 370 permanent research plots have been sampled over two years and will continue with additional sampling in 2011.

Distributed [\*Restorative Commons: Creating Health and Well-Being Through Urban Landscapes\*](#), which is a Forest Service edited volume, created in collaboration with the nonprofit Meristem, that explores sites and programs that feature creative design, foster civic stewardship of natural resources, and promote sustainability. Articles include interviews, case studies, thought pieces, and interdisciplinary theoretical works that explore the relationship between human health and the urban environment. It was the most requested NRS publication in 2010. It will be reprinted for the third time in 2011 and will soon be sold through the US Government Printing Office.

**Effects of forest restoration on terrestrial salamanders** – Parks’ scientists have been studying how the populations of eastern red-backed salamanders differ between restored and pristine forest areas in Inwood Hill Park for the last five years. Woodland salamanders are sensitive to microclimates and there are two different morphs of *Plethodon cinereus*, striped and unstriped. While salamander abundances did not differ between restored and pristine forest sites, Parks’ scientists have found that the salamanders in pristine forest areas are larger and more likely to be of the striped morph. Last year, this study was expanded to Van Cortlandt Park in the Bronx, where pre-restoration baseline salamander population data is being collected. Results from 2010 show that salamanders in forest areas invaded by non-native shrubs are smaller, and fewer are striped, than in uninvaded forest.

Continued collaborative research on the **Effects of Urban Restoration Efforts on Ecosystem Structure and Functioning** with partners from The New School, Columbia University, and Yale University. Nine permanent research plots were installed at seven reforestation sites in close collaboration with Parks’ forest restoration team. The research team applied for funding from NSF for the establishment of additional research experimental plots and continued data collection and analysis. This research examines the dynamic interactions between plants, soils, and management practices and how they change over time, focusing on ecosystem structure and function as well as species abundance and distribution.

Supported the “**Bronx River On-Water Education Program**” with Forest Service’s 2010 More Kids in the Woods funding. This project is created by the nonprofit [Rocking the Boat](#) and emphasizes educating South Bronx youth through active environmental restoration at their Hunts Point site on the Bronx River. The Urban Field Station also worked with Rocking the Boat’s apprentices to implement a research project that focused on social science data collection and verification for the Stewardship Mapping Assessment Project.

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For additional information please visit <http://nrs.fs.fed.us/nyc/about>, or email Erika Svendsen, Research Social Scientist, at [esvendsen@fs.fed.us](mailto:esvendsen@fs.fed.us) or Jacqueline Lu, Director of Research & Analysis, at [Jacqueline.Lu@parks.nyc.gov](mailto:Jacqueline.Lu@parks.nyc.gov)