

Research Permits Report

2014 Annual Report



NYC Parks

City of New York
Parks and Recreation
Bill de Blasio, Mayor
Mitchell J. Silver, Commissioner

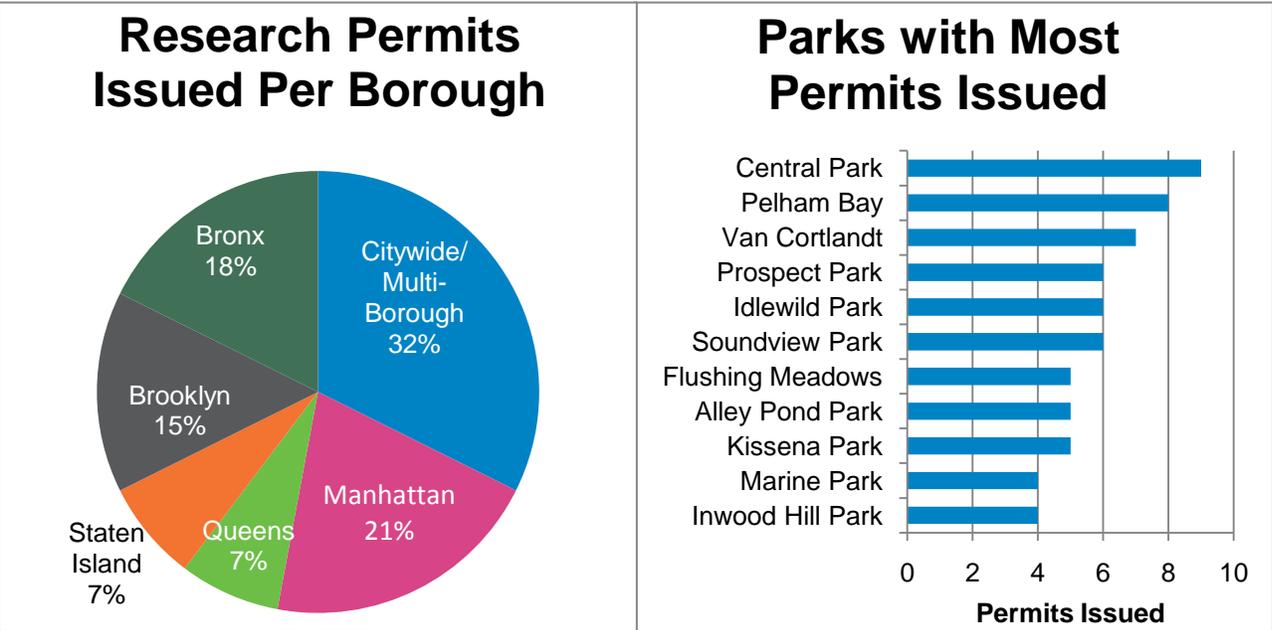
Introduction

The mission of the Natural Resources Group (NRG) is to protect, restore, expand, and manage New York City’s remnant and restored natural areas. The mission of the NYC Urban Field Station (UFS) is to improve the quality of life in urban areas by conducting and supporting research about socio-ecological systems and natural resource management. Each year, research permits are reviewed and issued by the NRG via the NYC UFS to researchers interested in conducting scientific research on NYC Parks properties.

Overview

In 2014, 68 research permit applications were granted by the NYC Department of Parks & Recreation Natural Resources Group. Out of all the permits granted, 24 were renewals of ongoing research projects. Research was distributed throughout the five boroughs and spanned multiple parks, habitat types and taxa. Research applicants also spanned a range of organizations including public schools, universities, environmental organizations, government agencies, and other local organizations. We also issued our first research permit to a Canadian organization, the Canadian Museum of Nature, this year.

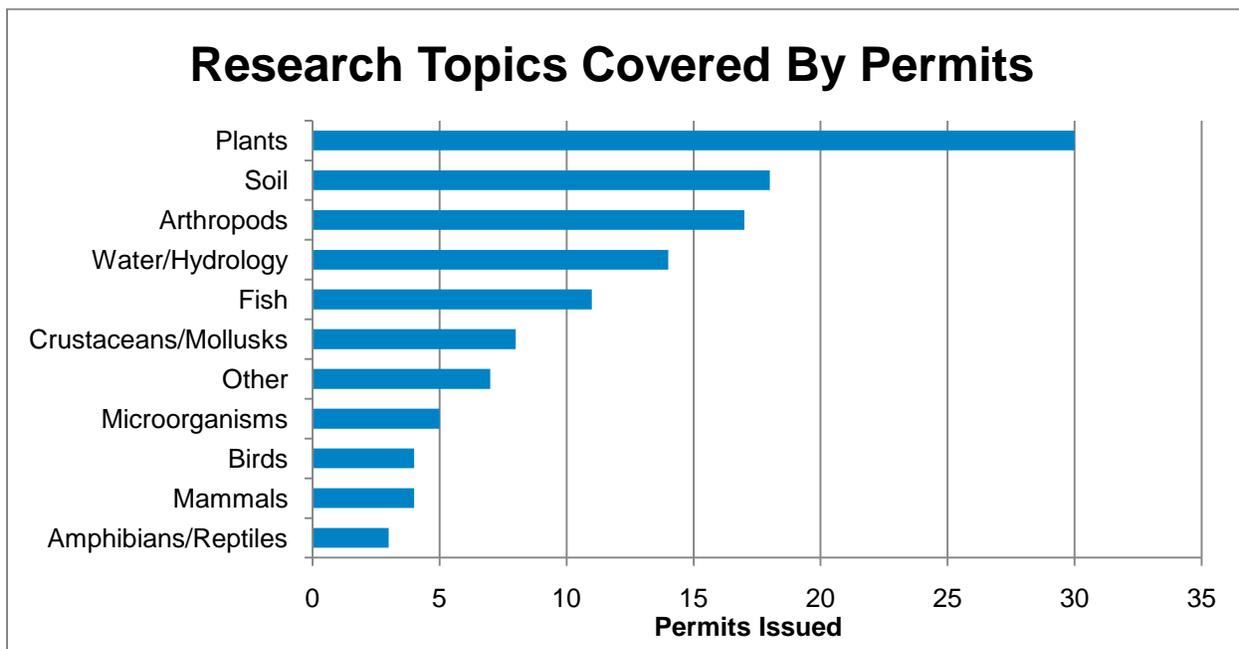
Locations: Borough and Park



Most of the research permits issued were for citywide or multi-borough projects (22 permits). For single-borough projects, Manhattan had the most permits (14 permits) and Queens and Staten Island had the fewest (5 permits, respectively). Out of all city parks, Central Park was the most frequently studied followed by Pelham Bay, Van Cortlandt, and Prospect Park.

Research Topics

The breadth of research that was conducted on park land spanned multiple taxa, habitats, and disciplines. This year, the majority of research being done in the parks was focused on plants, soil, and arthropods, and many permits covered multiple research topics. Other research topics included environmental radiation, elevation, and wetland delineation.



Affiliations of Researchers

Various institutions and organizations conducted research on parkland, and the majority of researchers were affiliated with universities. Many of the projects involved collaborations between multiple organizations, which have been color coded (see below).

Environmental/Ecological Organizations

Lower East Side Ecology Center
 Mianus River Gorge Preserve
 NYC Audubon
 NY/NJ Baykeeper
 The Nature Conservancy
 Wildlife Conservation Society

Federal/State/City Government

National Park Service
 NYC DOE
 NYC EDC
 NYS DEC
 USDA Forest Service
 USDA Natural Resources Conservation Service
 US EPA
 USGS

Affiliations of Researchers (continued)

Universities

Barnard College
Bates College
Boston University
Bronx Community College
Brooklyn College
College of Staten Island
Columbia University
Cornell University
CUNY City College
Drexel University
Fordham University
Hunter College
Lehman College
Monmouth University
The New School
Pace University
Pratt Institute
Queens College
Queensborough Community College
Rutgers University
SUNY-ESF
University of Maryland
University of Tennessee Knoxville
University of Wyoming
Yale University
Yeshiva University

K-12 Schools

Bard High School Early College
Central Medford High School
Friends of Staten Island Green Charter School
High School for Construction Trades, Engineering,
and Architecture
New York Harbor School
P.S. 277
Riverdale Country School
Sunset Park High School
Trinity School
Yeshivah of Flatbush

Other Organizations

American Museum of Natural History
Canadian Museum of Nature
Cold Spring Harbor Laboratory
Henningson, Durham, & Richardson Architecture
and Engineering
Marine Biological Laboratory
Morton Arboretum
Normandeau Associates, Inc.
Parsons Brinkerhoff

Brief Descriptions of All Research Projects

ONGOING PROJECTS

Since 2013

Vadim Acosta at **Bronx Community College** led a six-week summer course for community college students as a part of the Summer Institute for Field Investigations program. This course combined research training with environmental field sampling and involved students collecting water and soil samples from parks near the Bronx and Harlem Rivers: Bronx, Inwood Hill, Randall's Island, and Soundview Parks.

As a part of the ongoing Urban Barcode Project, Ayse Aydemir and her students at **Bard High School Early College** partnered with **Cold Spring Harbor Laboratory** and the **Lower East Side Ecology Center** to use DNA fingerprinting methods to identify invertebrates in soil samples from East River Park. More information on the Urban Barcode Project can be found here: <http://www.urbanbarcodeproject.org>.

Chelsea Butcher at **Fordham University** determined the genetics of colonizing plants on green roofs. She and her collaborators are interested in the diversity and plant population dynamics of green roofs spread out across the city.

Jennifer Donovan, John Taylor, and their students at **Trinity School** worked with collaborators at the **University of Wyoming** to do a comparative study of the biodiversity of different biomes and to familiarize both students and teachers with scientific research methods. They conducted photographic surveys of insects, birds, plants, and amphibians in Central Park and compared their findings with surveys from Yanyacu, Ecuador; Sheridan, Wyoming; and Anchorage, Alaska.

Susan Elbin at **NYC Audubon** continued her study of ant species in the Libra Triangle Greenstreet.

Joseph Gessert and his collaborators at the **New York Harbor School** examined populations of Atlantic oysters, eelgrass, and Atlantic Bay scallops in Jamaica Bay. They conducted underwater visual surveys with photographic backup and collected specimens for genetic testing.

Jason Munshi-South at **Fordham University** continued his study of the genomics of rats in New York City. He sampled rats from all parks throughout Manhattan and used both DNA and RNA techniques to examine their population structure.

Carole Reiss and her collaborators at **Friends of Staten Island Green Charter School** brought elementary school students to Clove Lake Park, Graniteville Quarry, and Silver Lake to teach them about water quality. Students used water analysis kits to compare water from the streams and lakes, tap water and bottled water.

Rich Shaw, Edwin Muñiz, and Michael Wilson at the **USDA Natural Resources Conservation Service**, along with Joshua Cheng and Theodore Muth at **Brooklyn College**, examined the microbial communities and physical, chemical and mineralogical properties of soils in Inwood Hill, the Staten Island Greenbelt, Corporate Park Woods, Blue Heron Park, and Conference House.

Since 2012

Mark Botton at **Fordham University** along with collaborators from **NYC Audubon** continued their research on horseshoe crabs at Plumb Beach. They are interested in the spawning activity, egg deposition, and juvenile habitat use by horseshoe crabs in response to beach nourishment.

Alison Kocek at **SUNY-ESF** continued her research on saltmarsh sparrows and their habitat at Sawmill Creek, Four Sparrow Marsh, Idlewild Park, Marine Park, Alley Pond Park, Pugsley Creek, and Pelham Bay Park. She is interested in how sea-level rise and tidal saltmarsh loss influence saltmarsh sparrow populations.

Wade McGillis at **Columbia University** continued his research on water quality near several Combined Sewer Overflows (CSOs) located on the Hudson River near Harlem Piers Park. He is interested in water temperature, specific conductivity, salinity, pH, turbidity, dissolved oxygen, and background levels of bacteria.

Seth Wollney and Eugenia Naro-Maciél at the **College of Staten Island** continued their research on turtles and their diet; this research was conducted in Long Pond Park, North Mount Loretta State Forest, La Tourette Golf Course, William T. David Wildlife Refuge, and Richmond Creek.

David Yozzo and Nicholas Wood at **Henningson, Durham, and Richardson Architecture and Engineering** continued their aquatic survey of Springfield Lake using electrofishing and fish traps.

Since 2011

Alex Felson and Mark Bradford at **Yale University** continued their research on woody species that colonized MillionTreesNYC planting sites at Kissena Corridor Park.

Allison Fitzgerald and her colleagues at **NY/NJ Baykeeper** continued their Oyster Gardening Program where local residents took care of small cages of oysters and collected growth and mortality measurements.

Franco Montalto and his students at **Drexel University** continued their research on the hydrology of green infrastructure in the city. Their research sites are in Alley Pond Park and numerous greenstreets in Queens and the Bronx, and their instruments in Alley Pond Park recently became a part of the **USDA Forest Service's** Smart Forest Network.

Mark Weckel at the **American Museum of Natural History** and his collaborators Chris Nagy at the **Mianus River Gorge Preserve**, Jason Mushi-South at **Fordham College**, Scott Silver at the **Wildlife Conservation Society**, and Suzanne Clemente at **Pace University** continued their research on the coyote population distribution in New York City. More information on their research can be found here: <http://www.gothamcoyote.com>.

Since 2010

Dustin Partridge at **Fordham University** continued his research on green roofs as a stopover habitat for migrating birds. This research was conducted on green roofs atop recreation centers across the city: St. Mary's Recreation Center (Bronx), Sunset Park Recreation Center (Brooklyn), Lyons Pool Recreation Center (Staten Island), Jackie Robinson Recreation Center (Manhattan), Lost Battalion Hall Recreation Center (Queens), Sorrentino Recreation Center (Queens).

Before 2010

Melissa Cohen at **NYS DEC** used electrofishing to conduct a fisheries survey in Willowbrook Park, Prospect Park, and Flushing Meadows Corona Park. Her work is part of a long-term study of fish populations in NYC water bodies – the first of which took place in 1996 in Oakland Lake in Alley Pond, Queens.

Jason Grabosky at **Rutgers University** together with collaborators at **Cornell University** did a census of trees along Lorimer Street between Driggs and Bayard. This is their 9th data collection in the past 16 years, and they collected information on common tree health metrics such as tree DBH (diameter at breast height), tree height, and twig growth.

Susan Elbin and her colleagues at **NYC Audubon** continued their work on the Harbor Heron project on breeding birds at Arverne Beach, North and South Brother Island, Mill Rock, U Thant Island, and Goose Island. They are interested in herons, egrets, ibises, cormorants, and gulls, and they have been formally monitoring harbor herons since 1982. More information on the Harbor Heron project can be found here: <http://www.nycaudubon.org/issues-of-concern/harbor-herons>.

NEW PROJECTS

Lauren Alleman at **Parsons Brinkerhoff** conducted a wetland delineation and wildlife and plant survey at Pelham Bay Park.

Regina Alvarez at **Queensborough Community College** conducted a botanical inventory of naturally occurring species in Central Park.

Amy Berkov at **CUNY City College** led a group of students in a study of the distribution of decomposer arthropods compared to plant-feeding arthropods in Central and Inwood Hill Parks.

Elisa Bone and her collaborators at **Columbia University** are developing a standard assessment protocol for the habitat quality of ecologically enhanced, stabilized urban shorelines. They deployed colonization devices to assess sessile and mobile invertebrate communities and minnow traps to sample small fish. They also measured water quality and abiotic factors.

Lauren Breza at the **University of Tennessee Knoxville** collected Canada goldenrod samples from Alley Pond, Bronx, Canarsie, Cunningham, Forest, Fort Totten, Givans Creek, Highland, Inwood Hill, Pelham Bay, Riverdale, Seton Falls, Soundview, and Van Cortlandt Parks. The samples are part of a study on the variations in physiological, phonological and functional traits of Canada goldenrod along urban-rural gradients.

Brian Brigham at **Queens College** studied the effects of nutrient pollution on greenhouse gas emissions from the Hudson River Estuary. He collected sediment from Saw Mill Creek Marsh for a series of lab incubations and measured their greenhouse gas fluxes under different nutrient conditions.

Sarabeth Buckley and Wally Fulweiler at **Boston University** examined whether salt marshes are keeping up with sea level rise using sediment cores, litterbag decomposition, and CO₂ respiration rates. Their study sites are Hunter Island in Pelham Bay Park and Udall's Cove Park Preserve.

Marguerite Burke at **P.S. 277** brought 4th and 5th grade students to Marine Park to observe and measure vegetation, shellfish, and killies. They also collected sand and water samples to test for salinity.

Jessica Cancelliere at **NYS DEC** placed bark beetle traps in Van Cortlandt Park as part of the National Survey for Exotic Bark and Ambrosia Beetles.

William Capurso at **USGS** New York Water Science Center installed brackets for storm-tide sensors at Midland Beach Fishing Pier and Western Jetty as part of SWaTH (Surge, Wave, and Tide Hydrodynamic), a regional network of sensors that track flood impacts and assess flood damage.

Rachel Cox at the **Riverdale Country School** compared the stress response in mollusks using enzyme and genetic samples from Soundview Park and an estuary in Connecticut.

Patricia Culligan at **Columbia University** led a team of 20 investigators from **Barnard College**, **Columbia University**, **Drexel University**, and **Pratt Institute** in a study aimed at improving the green infrastructure performance, especially in the Bronx River Watershed. She and her colleagues collected hydrologic, water quality, vegetation and microbial data from numerous green streets, green roofs, and right-of-way bioswales across the city.

John Dennehy at **Queens College** led a study of soil microbial diversity across an urban gradient from eastern Long Island to New York City. He and his collaborators collected soil samples from Alley Pond, Canarsie, Claremont, Columbus, Dyker Beach, East River, Flushing Meadows Corona, Friends Field, Idlewild, Juniper Valley, Kissena, Owl's Head, Prospect, Randall's Island, Sara D. Roosevelt, Springfield, Spring Creek, and Van Cortlandt Parks.

Antonia Florio at **Cold Spring Harbor Laboratory** and Christine Mazza at the **NYC DOE** organized 2-week DNA barcoding courses that took place at the Genovesi Environmental Study Center. These courses brought together public high school students and their teachers to assess the biodiversity in Marine Park using DNA extraction and sequencing.

David Geliebter at the **Yeshivah of Flatbush** studied the effectiveness of using student volunteers to regularly hand pull Japanese knotweed from a patch north of Plumb Beach. (Project was postponed to this year.)

Rich Hallett at the **USDA Forest Service** brought a group of science teachers to Riverdale Park to demonstrate basic soil sampling and tree health methods.

Zoe Hamstead at **The New School** led a group of students to collect information on the condition, location, and health of trees in Tompkins Square Park as part of a Geographic Information Systems class.

Soonil Higashino at **Fordham University** studied the cutaneous bacteria of salamanders that inhibit fungal diseases that are affecting amphibian populations. The study is based in Pelham Bay and Van Cortlandt Parks.

Rachel Holmes at **The Nature Conservancy** organized the LEAF (Leaders in Environmental Action for the Future) Summer Internship Program at Prospect Park where high school students collected tree health data using methods developed by the **USDA Forest Service**. More information about the LEAF program can be found here: <http://www.nature.org/about-us/careers/leaf/>.

David Johnson at **Marine Biological Laboratory** studied the effect of sea-level rise on the regional distribution of the coffee-bean snail. He set up plots in Pelham Bay Park to measure the size and density of coffee-bean snails.

Lea Johnson at **University of Maryland** collected baseline vegetation, soil, and earthworm data from a number of permanent forest plots in Alley Pond, Conference House, Cunningham, Idlewild, Jamaica Bay, Pelham Bay, Paerdegat Basin, Rockaway Community and Willowbrook Parks. The plots are located in areas that will be restored in the coming years by NYC Parks.

Alexis Kleinbeck at **Rutgers University** assessed invasive plant cover and slope in restoration sites located in Bronx Park, Muskrat Cove, and Shoelace Park as part of a study assessing restoration outcomes along the Bronx River.

David Kupfer at **Queensborough Community College** collected and identified invertebrates in Captain Tilly Pond.

Annesia Lamb of **Brooklyn College** was issued two permits. One was to measure water quality at Marine Park as part of a pre-college course titled “Exploration of Urban Water Bodies.” The second was to study the effects of eutrophication in ulva (a type of macroalgae) beds in Bayswater Park and Motts Basin by collecting ulva and sediment samples.

Antonio Liberta at **Yeshiva University** studied the diversity of Auchenorrhyncha – a suborder of insects that include cicadas, leafhoppers, treehoppers – in Highbridge Park. He hopes to identify invasive and any undescribed species that may be found in the park.

Tiffany Medley at **Monmouth University** mapped the presence and condition (e.g., length, height, weight) of wild oysters in Castle Hill, Ferry Point, Little Bay, MacNeil, Pelham Bay and Soundview Parks.

Jason Munshi-South at **Fordham University** studied the levels of filamentous bacteria in the gut microbiome of white-footed mice in Highbridge Park.

David Newman and his colleagues at **NYS DEC** conducted monthly water quality surveys of lakes/ponds in Central Park, Prospect Park, Flushing Meadows Corona Park, and Kissena Park.

Patricia Rafferty at the **National Park Service** collected elevation data from Four Sparrow Marsh, Gerritsen Creek, Idlewild Marsh, Paerdegat Basin, Spring Creek to assess their vulnerability to sea level rise.

Claude Renaud at the **Canadian Museum of Nature** collected American brook lamprey from Tibbetts Brook in Van Cortlandt Park as part of a global study of lamprey taxonomy.

Ileana Rios and her collaborators at the **Trinity School** led students in a number of independent projects where they collected leaf, insects and worms from various parks as part of **Cold Spring Harbor Laboratory’s** Urban Barcode Project.

Guy Robinson at **Fordham University** collected pollen from Pelham Bay Park to reconstruct the pre-Columbian landscape of New York.

Bryant Scharenbroch at **The Morton Arboretum** is working with collaborators to assess the condition and size of trees in multiple cities across the U.S. in order to develop an urban site index.

Michael Scherer at **Normandeau Associates** studied the impact of the Floating Lady Barge at Barretto Point Park on water quality and resident flora and fauna.

Cindy Thatcher at the **USGS** collected elevation data to support the development of a post-Hurricane Sandy regional digital elevation model. This model will support disaster preparedness, disaster response, hydrodynamic modeling, and development planning.

Michael Torg and his students at **Central Medford High School** in Oregon analyzed soils from Central Park as part of a nationwide soil testing project.

John Waldman at **Queens College** led a study on the effects of dams on the densities and sizes of American eels in Bronx River Park using electrofishing and mark-recapture methods.

Megan Wallner at **Sunset Park High School** brought 10th grade students to Sunset Park to collect plant and fungi samples as part of **Cold Spring Harbor Laboratory's** Urban Barcode Project.

Hongqing Wang and Greg Snedden at **USGS** led a study of long-term salt marsh accretion rates at Jamaica Bay. Together with NYC Parks staff, they collected soil cores from Four Sparrow Marsh and Spring Creek Park for radioisotope analysis.

Elizabeth Watson at the **US EPA** led a project on the stable isotope ratios in estuarine fish, snails and vegetation, and sediment as indicators of nutrient pollution. She and her collaborators collected samples near SETs (Surface Elevation Tables) in Idlewild Park, Pelham Bay Park, Saw Mill Creek, Spring Creek, and Udalls Cove Park Preserve.

Rachel Weinberg at **Hunter College** estimated the carbon absorption of trees in Central Park using dendrometer bands.

Matthew Williamson at **Lehman College** measured environmental radiation using a sodium iodide radiation detector in Central Park.

Karen Wong at the **High School for Construction Trades, Engineering, and Architecture** led a group of students to Rockaway Beach and Boardwalk and Rockaway Community Park to collect plant samples as part of **Cold Spring Harbor Laboratory's** Urban Barcode Project.

Publications from Past Research Permits

The following is a list of publications related to past research permits that researchers have shared with us.

Published in 2014

Munshi-South, J., Nagy, C. 2014. Urban park characteristics, genetic variation, and historical demography of white-footed mouse (*Peromyscus leucopus*) populations in New York City. PeerJ. doi: 10.7717/peerj.310. <https://peerj.com/articles/310/>

Oldfield, E.E., Felson, A.J., Wood, S.A., Hallett, R.A., Strickland, M.S., **Bradford, M.A.** 2014. Positive effects of afforestation efforts on the health of urban soils. *Forest Ecology and Management* 313: 266-273. <http://www.sciencedirect.com/science/article/pii/S0378112713007822>

Youngsteadt, E., Henderson, R.C., Savage, A.M., Ernst, A.F., Dunn, R.R., Frank, S.D. 2014. Habitat and species identity, not diversity, predict the extent of refuse consumption by urban arthropods. *Global Change Biology*. doi: 10.1111/gcb.12791. <http://onlinelibrary.wiley.com/doi/10.1111/gcb.12791/abstract>

Published in 2013

McGuire, K.L., Payne, S.G., Palmer, M.I., Gillikin, C.M., Keefe, D., Kim, S.J., Gedallovich, S.M., Discenza, J., Rangamannar, R., Koshner, J.A., Massmann, A.L., Orazi, G., Essene, A., Leff, J.W., Fierer, N. 2013. Digging the New York City skyline: Soil fungal communities in green roofs and city parks. PLoS One 8(3):e58020.

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0058020>

Smalls-Mantey, L., DiGiovanni, K., Olson, M., **Montalto, F.A.** 2013. Validation of two soil heat flux estimation techniques against observations made in an engineered urban green space.

Urban Climate 3: 56-66. <http://www.sciencedirect.com/science/article/pii/S2212095512000168>

Published in 2012

De Sousa, M.R.C., **Montalto, F.A.**, Spatari, S. 2012. Using Life Cycle Assessment to Evaluate Green and Grey Combined Sewer Overflow Control Strategies. Journal of Industrial Ecology 16: 901–913.

<http://onlinelibrary.wiley.com/doi/10.1111/j.1530-9290.2012.00534.x/abstract>

For More Information

Research Permits Manager: Novem Auyeung, novem.auyeung@parks.nyc.gov

NRG website: <http://www.nycgovparks.org/greening/natural-resources-group>

NYC UFS website: <http://www.nrs.fs.fed.us/nyc/>

Last updated: December 12, 2014