

Introduction

The mission of the Forestry, Horticulture, and Natural Resources Division (FHNR) is to protect, restore, expand, and manage New York City’s natural spaces to maximize their benefits for environmental and community health and resilience. 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 NYC Parks staff via the NYC UFS to researchers outside of the agency who are interested in conducting scientific research on NYC Parks properties.

Program Overview

In 2018, 84 permits¹ were issued citywide. A majority of the permit holders were from academic institutions (38%), with non-profit organizations, like NYC Audubon and Billion Oyster Project, conducting 31% of the projects citywide (Figure 4).

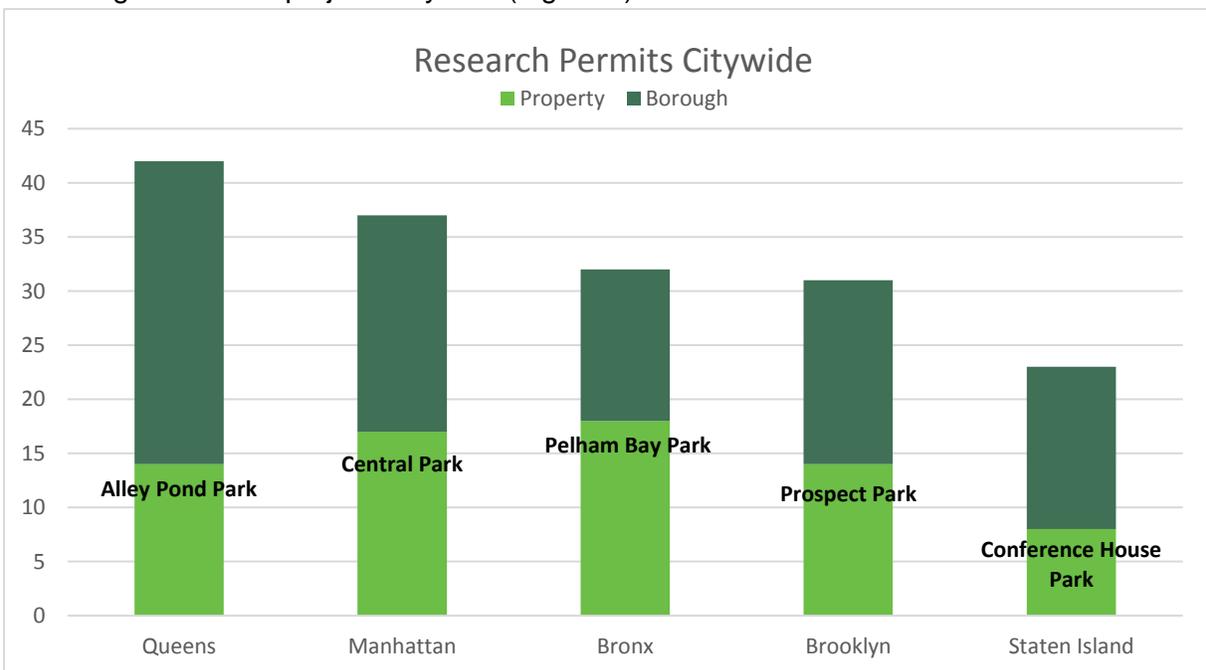


Figure 1. We had 436 study sites across the 5 boroughs. While Queens had the most study sites in NYC, Pelham Bay Park had the most visits by researchers.

¹ In addition to the 84 permits issued, additional projects were tracked by the research permits program as a means of notification and gathering feedback from NYC Parks staff regarding natural resources management required by federal or state agencies, such as the Animal and Plant Health Inspection Service’s (APHIS) Wildlife Damage Management programs around airports.

Cover photo: Microbial composition from soil and water samples collected from 4 different pools in Alley Pond. Each color represents a different taxonomic group of microbes.

Photo credit: Joan Petersen, 2018

A majority of research projects occurred in Queens, followed by Manhattan. Many projects took place in multiple boroughs, so the same permit may have been tallied multiple times, once for each borough included in the study. Pelham Bay Park was the most frequently studied park, followed by Central Park (Figure 1). There were 175 other NYC Parks properties or study sites (e.g., some research permits involved street trees, which are located in the right-of-way and not a specific NYC Parks property) where work was conducted under research permits.

2018 Program Highlights

The Urban Barcode Project (UBP) constituted most of the secondary education permits. NYC Parks has been playing an active role, through UBP, in teaching students about the role of permitting in research and exploring biodiversity throughout our parks. Cold Spring Harbor Laboratory DNA Learning Center launched the Urban Barcoding Project in 2011 as an extension of the lab's continued mission to promote regional STEM education. The program takes a citywide approach and encourages all high school science programs to participate. UBP provides guidance for mentors and students as well as equipment and learning modules.

Genetic analysis continues to play a strong role in research citywide (Figure 2). There has been a 21% growth in DNA/RNA research components on a variety of taxa since we started tracking permits in 2009. With the genetic analysis becoming more economical and accessible for all external institutions, this approach may be used more often to answer questions about natural resources.

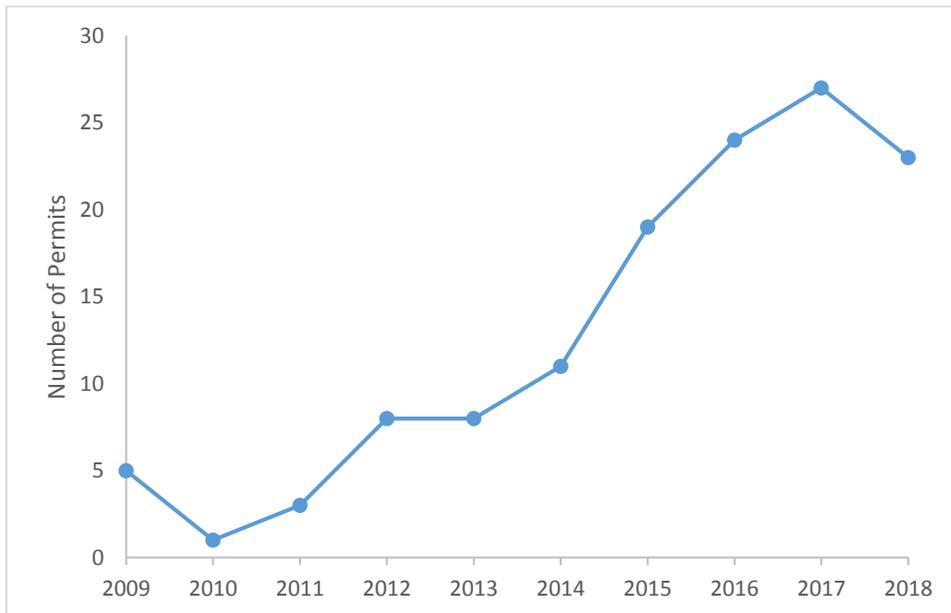


Figure 2. Number of permits that utilized genetic analysis as the main research direction or a component of a project.

Reporting

In the past, we have emailed individual permit annual reports to applicable reviewers. With the addition of NYC Parks intranet sharepoint system, we will be adding all permit information to an easily shared spreadsheet that will allow us link all the annual reports for the different projects.

- [NYC Parks intranet sharepoint](#) – Current research permits are listed with annual reports attached. Permits can be filtered by Park name, Institution and/or Research Topic.
- [Google Drive folder for outside reviewers](#) – Conservancy staff that cannot access the NYC Parks intranet can download annual reports specific to their park.

Research Topics

Research permits continue to diversify, so new research topic categories were added to track all of the work (Figure 3). Most of the new categories were used to track the level of taxonomic specificity some permits had compared to others. For example, many permits had a broad taxonomic focus on all plants (27 permits) while others were narrowly focused on only algae (7 permits) or only lichens (3 permits). Similar to previous years, vegetation monitoring topped the list again as the most studied research topic across the five boroughs.

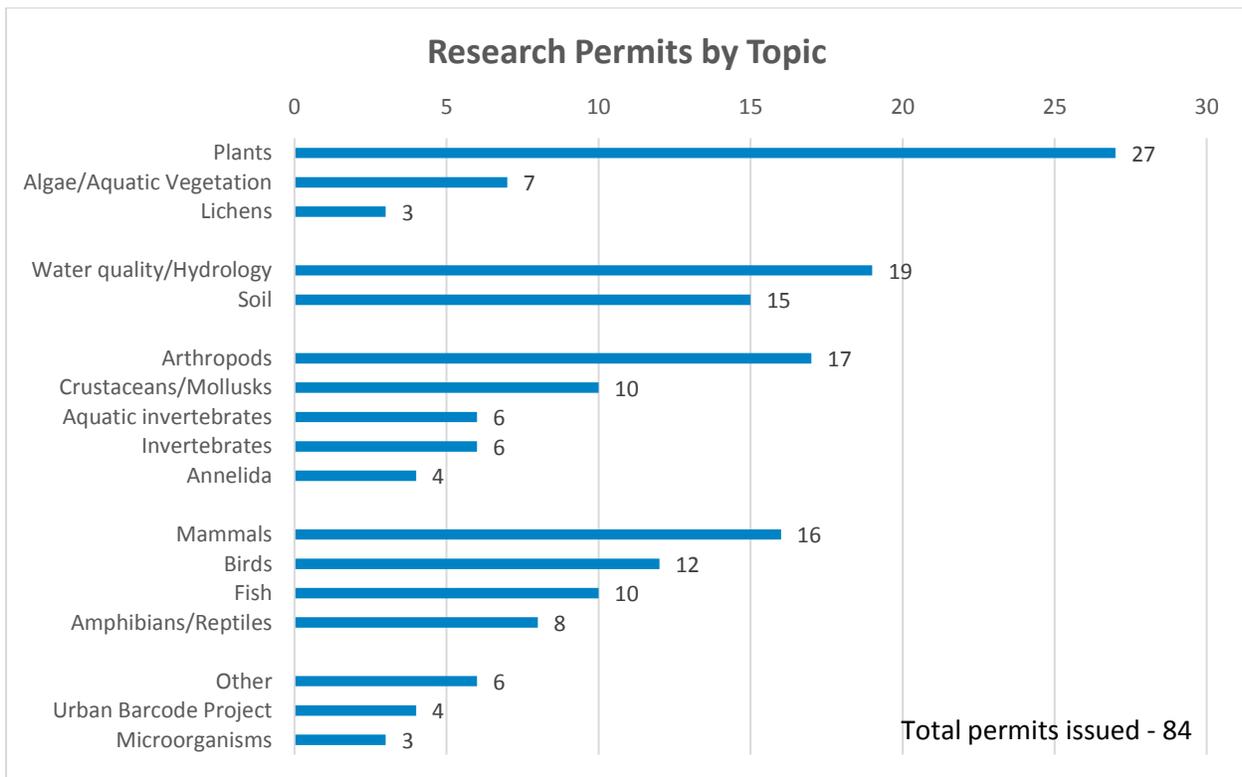


Figure 3. Research permits issued by taxa or area of study

Affiliations of Researchers

Universities

- Barnard College
- City College of New York
- Columbia University
- Cornell University
- Drexel University
- Fordham University
- George Washington University
- Icahn School of Medicine at Mount Sinai
- John Jay College of Criminal Justice
- Kwansei Gakuin University
- Macaulay Honors College
- New York Academy of Sciences
- New York University
- Pace University
- Rutgers University
- SUNY-ESF
- The Ohio State University
- University of Maryland
- Wagner College
- Yale University

Non-Profit Organizations

- American Museum of Natural History
- Billion Oyster Project
- Friends of Van Cortlandt Park
- Girl Scouts of America
- Natural Areas Conservancy
- New York Botanical Garden
- New York City Audubon
- New York Natural Heritage Program
- New York Restoration Project
- Rocking the Boat
- Squirrel Census
- Staten Island Zoo
- The Trust for Public Land
- Trout Unlimited
- Washington Square Park Eco Projects
- Wildlife Conservation Society

K-12 Schools

- Academy for Young Writers
- Brooklyn Technical High School
- Forest Hills High School
- Francis Lewis High School
- Institute for Collaborative Education
- Secondary School for Journalism
- Tenafly High School
- The Browning School
- Wadleigh Secondary School
- Wave Hill

Other Government Agencies

- USGS
- NYCDEP
- NYSDEC
- USDA APHIS

Environmental Consultants

- AKRF
- Arcadis
- Hazen and Sawyer
- White Buffalo, Inc.

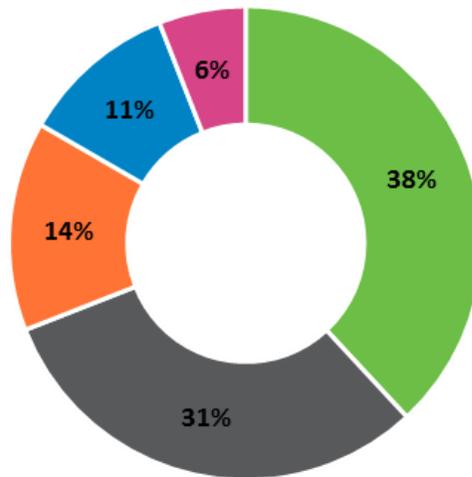


Table of All Research Projects

Name(s)	Organization(s)	Project Name
Neeya Byrd	Academy for Young Writers	Hendrix Creek water and soil sampling
Elizabeth Meade	AKRF	Proposed Coastal and Social Resiliency Initiatives for Tottenville Shoreline
Jesse Moore	AKRF	De Costa Avenue Wetland Delineation
Mark Weckel	American Museum of Natural History	GPS-GSM tracking of resident coyotes at the edge of their range in New York City
Mark Weckel	American Museum of Natural History	Mapping coyote habitat and dispersal corridors in the greater NYC metropolitan area
Mark Weckel	American Museum of Natural History	Pilot Testing Underwater Drone for NYC research & education
Nicholas Tailby	American Museum of Natural History	Geological Mapping of Outcrops in Riverside and Central Park
Noah Burg	American Museum of Natural History	Comparative Landscape Genetics of Marine Vertebrates and Invertebrates from within the Littoral Zone in New York State
Sally Warring	American Museum of Natural History	Pond life: seasonal shifts in urban pond micro-biodiversity
Sarah Kornbluth	American Museum of Natural History	Survey of bee pollinators of the High Line
Jessie Murray	Arcadis	DDC Sewer and Water Main Installations - REDA003 and REDA002 – Ecological Assessment
Brian Mailloux	Barnard College	Analysis of Tree Growth in New York City Tree Pits
Elizabeth Burmester	Billion Oyster Project	Performance and ecosystem services of restored oysters in NY Harbor
Elisa Margarita	Brooklyn Technical High School	The Correlation Between Soil Salinity and Plant Growth Measured Through Soil Respiration in New York City
Amy Berkov	City College of New York	City Parks: Islands of Insect Diversity
Patricia Kenyon	City College of New York	Electrical Resistivity Imaging of Heterogeneous Sediment Adjacent to the Inlet at Inwood Hill Park
Beryl Kahn	Columbia University	Genomic Variation and Plasticity in Urban Oysters
Dorothy Peteet	Columbia University	Paleohistory of marshes
Eve Allen	Columbia University	Common Garden Experiment with Panicum virgatum
Meredith VanAcker	Columbia University	Field studies of tick-borne pathogen transmission
Timon McPhearson	Columbia University	NYC Urban Forest Restoration
Laura Bigler	Cornell University	Wildlife Rabies Vaccination Program
Franco Montalto	Drexel University	Green infrastructure planning assessment and modeling
Elle Barnes	Fordham University	The Role of Urbanization on the Microbial Defense Mechanisms of Red-backed salamanders (Plethodon cinereus)
Jason Munshi-South	Fordham University	Molecular Investigation of Diet and Microbiomes in Urban White-footed Mice
Mark Botton	Fordham University	Horseshoe Crab Studies in Jamaica Bay
Michael Kausch	Fordham University	Factors Affecting Phytoplankton Diversity and Growth in Freshwater Ecosystems
Michael Parsons	Fordham University	Rats follow their nose: Using social structure and scent origins to produce new tools for urban pest management
Nicole Fusco	Fordham University	Using environmental DNA to detect stream salamanders along an urban-to-rural gradient
Lauren Scanlon	Forest Hills High School	Urban Barcode Project
Amanda Ma	Francis Lewis High School	Effectiveness of Mosquito Traps: The Mosquito Hunt
Helen Wang	Francis Lewis High School	DNA Barcoding the Biodiversity of Invertebrates in the Eutrophic Meadow-Willow Lake System
Saima Rahman	Francis Lewis High School	The application of Barcoding Techniques to establish biodiversity of Hydrachnidia in Alley Pond Park
John Butler	Friends of Van Cortlandt Park	Tibbetts Brook Water Quality Monitoring Program
John Butler	Friends of Van Cortlandt Park	Invertebrate Surveying in Van Cortlandt Park
Emily Kottler	George Washington University	Landscape genetics of a tidal marsh perennial threatened by sea-level rise

Name(s)	Organization(s)	Project Name
Laila DiLorenzo	Girl Scouts of America	Beautiful Pond Project
Christopher Campbell	Hazen and Sawyer	NYC DDC Capital Project HBPED800Q Reconstruction of the Tide Gate Bridge, Located in Flushing Meadows-Corona Park over Flushing Creek
Meagan McMahon	Icahn School of Medicine at Mount Sinai	Surveillance of RNA viruses in bird fecal samples
Katya Naphtali	Institute for Collaborative Education	Investigating the Infestation of Invasive Earthworms (Amyntas and Lumbricus) in Public and Private Areas of Greenpoint Soil
Angelique Corthals	John Jay College of Criminal Justice	Forensic Anthropology exercise - Recovery of remains
Hiroyuki Shimoji	Kwansei Gakuin University	Field research for an ant Nylanderia flavipes
Kelly O'Donnell	Macaulay Honors College	2018 Macaulay Honors College Inwood Hill Park BioBlitz
Leila Mougoui	Natural Areas Conservancy	Forest Management Framework Implementation
Allan Powe	New York Academy of Sciences	Using Plants as Bioindicators for Nutrient Eutrophication in NYC Waterways
Susan Elbin	NYC Audubon	Birds of New York City
Susan Elbin	NYC Audubon	Proposal to catch and band hatch-year Black Skimmers in NYC
Michael Feller	New York Botanical Garden	Urban Naturalist Field Trips
Steve Young	New York Natural Heritage Program	Suaeda species inventory of Vernam Barbadoes Preserve
Jason Smith	New York Restoration Project	American Chestnut Monitoring
Naja Kraus	NYSDEC	Kudzu Control Project
Abdulai Fofanah	NYSDEC	New York City SPDES MS4 Permit
Ira Gershenhorn	NYSDEC	Eel Mops at West Harlem Piers
Jason Smith	NYSDEC	Shorebird Monitoring at Arverne
Valerie Kearny	NYSDEC	River Otter Sign Survey 2018
Chris Bowser	NYSDEC	A Day in the Life of the Hudson and Harbor
Melissa Cohen	NYSDEC	Electrofishing surveys of NYC waters
Charlie Mydlarz	New York University	Sounds Of New York City (SONYC)
Erika Crispo	Pace University	Gene expression of stress-response gene as an indicator of oyster restoration success
Jamie Smith	Rocking the Boat	Suspended Intertidal Wetlands
Max Piana	Rutgers University	Urban-Rural Forest Recruitment Dynamics
Sarah Skubel	Rutgers University	Do invasive alien species from the US change their metabolomic and functional profiles to succeed in South Africa?
Steven Handel	Rutgers University	Jamaica Bay Fringing Habitats: Restoration Experiment - Maritime Uplands
Joy Finerson-Adu	Secondary School for Journalism	Barcoding Brooklyn
Jamie Allen	Squirrel Census	Central Park Squirrel Census
Sarrah Kaye	Staten Island Zoo	Staten Island Zoo Bioblitz 2018
Alison Kocek	SUNY-ESF	Demographic and habitat characteristics of Saltmarsh Sparrows and Seaside Sparrows in New York City and Long Island: Implications for Restoration Design
Kristen Lee	Tenafly High School	DNA Barcoding spider webs to use as a bioindicator of motor vehicle pollution
Emilie Wolf	The Browning School	Barcoding the Phenology Trail
Ashley Keesling	The Ohio State University	Phylogenetic relationships within Monotropa: is M. brittonii distinct?
Ruben Rames	The Trust for Public Land	2018 City Nature Challenge: Forest Park, New York
Christopher Aigner	Trout Unlimited	Alley Creek Habitat Improvement
Lea Johnson	University of Maryland	Drivers of long-term outcomes of ecological forest restoration in urban park forest patches

Name(s)	Organization(s)	Project Name
Darryl Jewett	USDA APHIS	Spotted Lanterfly Survey
Shawn Fisher	USGS	Effect of tree guards on stormwater retention
Yelyzaveta Kalinichenko	Wadleigh Secondary School	Plant and Aquatic Invertebrate Biodiversity at Morningside Lake
Elizabeth Suter	Wagner College	How do restored urban oyster reefs contribute to heavy metal sequestration?
Georgia Silvera Seamans	Washington Square Park Eco Projects	Observing Wildlife Longitudinally in Washington Square Park
Barry Kogan	Wave Hill	Ecological Monitoring and Stewardship in Natural Areas around Riverdale
Jason Aloisio	WCS	Project TRUE Teens Researching Urban Ecology: Exploring the Wildlife and Wild places of New York City
Anthony DeNicola	White Buffalo, Inc.	Demographic and Behavioral Impacts of an Intensive Male Sterilization Program for Free Ranging White-Tailed Deer on Staten Island, New York
Colleen McCann	Wildlife Conservation Society	Acoustic Monitoring of Bats in Prospect Park, Brooklyn
Annise Dobson	Yale University	Rapid evolutionary responses to jumping worms and white-tailed deer

Publications & Press on Permitted Research

Aloisio JM, Palmer MI, Tuininga AR, Lewis JD. 2019. Plant Colonization of Green Roofs Is Affected by Composition of Established Native Plant Communities. *Frontiers in Ecology and Evolution*. 6:238. <https://www.frontiersin.org/articles/10.3389/fevo.2018.00238/full>

Johnson LR, Handel SN. 2019. Management intensity steers the long-term fate of ecological restoration in urban woodlands. *Urban Forestry & Urban Greening*. 41:85-92. <https://doi.org/10.1016/j.ufug.2019.02.008>

Rosen, J. 2020. Cancel Earthworms. [Press related to Annise Dobson's project on jumping worms.] *The Atlantic*. <https://www.theatlantic.com/science/archive/2020/01/jumping-worms-are-taking-over-north-american-forests/605257/>

Tufts DM, VanAcker MC, Fernandez MP, DeNicola A, Egizi A, Diuk-Wasser MA. 2019. Distribution, Host-Seeking Phenology, and Host and Habitat Associations of *Haemaphysalis longicornis* Ticks, Staten Island, New York, USA. *Emerging Infectious Diseases*. 25(4): 792-769. DOI: <https://doi.org/10.3201/eid2504.181541>

VanAcker M, Little EAH, Molaei G, Bajwa WI, Diuk-Wasser MA. In press. Enhancement of Risk for Lyme Disease by Landscape Connectivity, New York, New York, USA. *Emerging Infectious Diseases*. 25(6).

For More Information

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NYC Parks research permits program website: <https://www.nycgovparks.org/permits/research/>

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

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