Project Period	01/01/2013 - 12/31/2013
Award Amount	$35,000.00
Matching Contributions	$115,000.00
Project Location Description (from Proposal)	Randall's Island Park, New York, NY 40°47'49.64 N and 73°54'56.35 W

Project Summary (from Proposal)

Engage 2,400 students from 35 schools and 600 volunteers in enhancement and monitoring of, and education about, a nine acre salt marsh and freshwater wetland. 600 volunteers will plant 500 trees on two acres.

Summary of Accomplishments

In 2013 RIPA was able not only to sustain the wetlands sites at Randall's Island Park but to expand the number and range of visitors served by our waterfront programs. In 2013, we not only maintained volunteerism at almost 90% of our record 2012 numbers, we increased visits by local school groups by almost 70% (and 50% more than in 2011); increased wetland tours by almost 40%; conducted on-site courses in salt marsh and freshwater wetlands exploration; expanded outreach; and worked to develop new boat launches and a unique "living shoreline," both slated for construction beginning in 2014. We also hosted new public birding, fishing and orienteering programs on weekends, which drew over 400 visitors throughout the year. We now look forward to using all we have learned to further develop the Waterfront Stewardship Program along these lines in 2014.

Lessons Learned

RIPA had a great turnout in 2013 for increased waterfront programming (70% increase in school visits; 8x increase in public event participation). In terms of volunteers, we built on a positive result of Super Storm Sandy in 2012, when damage to the Island's shoreline attracted unprecedented volunteerism (up 40% from 2011). By carefully retaining many of these volunteers, our volunteer growth in 2013, though not at our goal, sustained a 22% increase since 2011. In the Bronx Kill it was very difficult to create safe access for education; we need to wait for the new Bronx Connector bridge and Bronx Shore boat launches, both coming in 2014. We were however able to design safe programs for public stewardship of the site. A major concern at this site is erosion and storm runoff; the Crew works to maintain a strong upland buffer habitat to control sheet runoff from adjacent baseball fields. In 2013, this required weeding, digging trenches, adding sand, and maintaining biologs between the buffer and the roadway as well as at the base or "toe" of the upland slope, and denuded areas require replanting. In 2013, enthusiastic groups of local youth and adult volunteers were guided in these activities as well as in clean-up of debris. Adults from Con Edison as well as hundreds of young volunteers from area colleges and secondary schools helped maintain biologs and plantings and remove garbage from the shoreline – including over 3000 pounds of debris from the Bronx Kill.

Conservation Activities	Wetlands education for NYC public school children within LIS boundary of Bronx/East River
Progress Measures	# of participants in activity
Value at Grant Completion	2217
Conservation Activities	Volunteer wetlands stewardship

Progress Measures	# of volunteers engaged in project
Value at Grant Completion	475
Conservation Activities	Group wetlands tours for local organizations w/in LIS boundary of Bronx/East River
Progress Measures	# of participants in activity
Value at Grant Completion	135
Conservation Activities	Wetlands enhancement and stewardship
Progress Measures	Acres of habitat restored or enhanced
Value at Grant Completion	9
Conservation Activities	Spartina alterniflora maintenance in salt marshes
Progress Measures	# Individual plants/trees planted
Value at Grant Completion	3500
Conservation Activities	Shrubs/trees for upland maintenance at wetlands
Progress Measures	# Individual plants/trees planted
Value at Grant Completion	200
Conservation Activities	Herbaceous plugs installed in uplands at wetlands
Progress Measures	# Individual plants/trees planted
Value at Grant Completion	1780
Conservation Activities	Removal of phragmites, mugwort and other species from wetlands
Progress Measures	% or acres reduction in invasive species cover
Value at Grant Completion	9 acres
Conservation Activities	Replanting of native species in wetlands as needed
Progress Measures	Acres of native vegetation planted
Value at Grant Completion	2
Conservation Activities	Randall's Island Wetlands Monitoring and Maintenace Plan 2013
Progress Measures	# of management plans created
Value at Grant Completion	1
Conservation Activities	New education/volunteer/on-water activities in Bronx Kill
Progress Measures	Acres or linear feet of open space for recreation
Value at Grant Completion	5280
Conservation Activities	Conduct activities to support goals and purposes of LIS Comprehensive Conservation and Management Plan
Progress Measures	# of workshops, webcasts, webinars, special events, meetings associated with activity
Value at Grant Completion	22 workshops, events, meetings
Conservation Activities	Programs/Projects meet purposes of LIS Comprehensive Conservation and Management Plan
Progress Measures	Other Activity Metric (Volunteer events, tours, monitoring and program development related to the Bronx Kill)
Value at Grant Completion	14 volunteer events, tours, monitoring, programs
Conservation Activities	Wetlands programs with NYC public schools and CBOs
Progress Measures	# schools involved in activity
Value at Grant Completion	31

Final Programmatic Report Narrative

Instructions: Save this document on your computer and complete the narrative in the format provided. The final narrative should not exceed ten (10) pages; do not delete the text provided below. Once complete, upload this document into the on-line final programmatic report task as instructed.

1. Summary of Accomplishments

In four to five sentences, provide a brief summary of the project's key accomplishments and outcomes that were observed or measured.

In 2013 RIPA was able not only to sustain the 9 acres of wetland sites at Randall's Island Park but to expand the number and range of visitors served by our waterfront programs. In 2013, we maintained volunteerism at almost 90% of our record 2012 numbers, we increased visits by local school groups by almost 70% (and 50% more than in 2011); increased wetland tours by almost 40%; conducted on-site courses in salt marsh and freshwater wetlands exploration; expanded outreach; and worked to develop new boat launches and a unique "living shoreline," both slated for construction beginning in 2014. We also hosted new public birding, fishing and orienteering programs on weekends, which drew over 400 visitors throughout the year. We now look forward to using all we have learned to further develop the Waterfront Stewardship Program along these lines in 2014.

2. Project Activities & Outcomes

Activities

- Describe and quantify (using the approved metrics referenced in your grant agreement) the primary activities conducted during this grant. Activities are the actions that you completed with the grant funding. These activities helped you achieve the overall goals of your project. For example, acres restored, # installed rainwater harvesting sites, # of communities or volunteers engaged, data collected and analyzed etc.).

    - This year the Wetland Stewardship Program hosted over 2,200 students for education programming. This was a 70% increase in the number of students from 2012. 97% of all students serviced through the Wetland Stewardship Program were from public schools in the densely populated and underserved communities surrounding Randall's Island. Although safe access for school groups directly into the Bronx Kill Salt Marsh is pending completion of adjacent boat launches in 2014, the Natural Areas Crew began developing and sharing comparative studies between the Bronx Kill Salt Marsh and the Little Hell Gate Salt Marsh and Freshwater Wetlands on the Island's western shore. Of particular interest this year was the appearance of a snowy owl along the Kill.

    - Over 475 volunteers came to work in the Natural Areas on Randall's Island in 2013. We expanded our volunteer programming by creating our first regular, open, weekly workday for individuals to come and help maintain our shoreline and wetlands. A particular focus this year was on the Bronx Kill, in preparation for improved bicycle, pedestrian and boat access in 2014, and our volunteers were able to remove over 3,000 pounds of trash from the Bronx Kill salt marsh.

    - This year we hosted 31 different public schools and community based organizations on the Island through our programming.

- 160 individuals from local organizations came for wetland tours of Randall's Island. This was a 38% increase from 2012. Approximately 30%of these visitors explored sites in or adjacent to the Bronx Kill.

- We enhanced the ecological vibrancy of 9 acres of shoreline natural areas, removing invasive species planting woody and herbaceous plants for habitat, removing litter, improving access for visitors.

- In 2013 we planted 3500 Spartina alterniflora plugs in our Salt Marsh areas.

- 200 individual trees and shrubs were planted to help provide layered habitat and shade out aggressive weed species.

- 1780 mixed native grasses and wildflower plugs were installed this year to introduce the dense desirable genetic material in our uplands and marshes

- Natural Areas Crew carefully removed Phragmites australis, Artemisia vulgaris, Robina pseudoacacia, and Fallopia japonica from 9 acres of coastal wetland habitat.

- Two square acres of native vegetation were planted along coastal habitat in wetlands, uplands, riparian buffers, and rain gardens.

- One updated monitoring and maintenance plan for 2013 was created to help guide staff management of the spaces.

- Through staff led volunteer efforts, we were able to open 5280 linear feet of open space for recreation. These efforts have brought anglers, birders, and nature enthusiasts from Manhattan to the Long Island Sound.

- We have been able to lead and attend 22 workshops, events, and meetings.

- Our programming included 14 volunteer events, tours, monitoring efforts, and programs along the Long Island Sound/Bronx Kill.

- Briefly explain the differences between the activities conducted during the grant and the activities agreed upon in your grant agreement and proposal.

  We had hoped to serve 2400 children this year, and thought we increased by 70% over our 2012 numbers we hosted just over 2200. One factor was the sudden loss of our Natural Areas Manager, which slowed progress to a degree; however, even before she left we were realizing that number was unrealistic. For 2014, we are aiming to hold steady at 2200 children for our weekday programs, as what seems the limit based on site availability, staffing and available school days in season. At the same time, we were able to sustain strong volunteer numbers in 2013, and aim to increase these, with the help of a new Volunteer Coordinator; we are especially pleased to have focused heavily on restoration of the Bronx Kill Salt Marsh, an area very popular with wading birds from the adjacent Brother Islands, but only recently becoming more visible and accessible to the public. Finally, a significant and successful effort in 2013 – not anticipated in our proposal – went into increasing creative, multigenerational free weekend events, as a means to bring a greater number and range of local visitors to the Park. This effort was organization-wide, and included athletic, arts, gardening and horticultural events, in addition to environmentally-based special events conducted by the Natural Areas Crew, which brought 500 visitors to our sites. We are especially pleased with our new Birding Buddies events, which bring new attention to the popular Bronx Kill, and are planning boating events along the Kill beginning with the opening of our first small boat launches in 2014. Our increased and improved outreach and use of social media has considerably expanded our ability to attract and host more Park visitors.

In addition, in 2013 considerable effort was expended by the Natural Areas Crew and RIPA administrative staff toward improved access and programming of the Bronx Kill and adjacent shoreline. A key element was management of the new Bronx Shore Restoration project, a $10 million effort put in place in 2013 and in construction in 2014; this includes new playing fields, dedicated bicycle and pedestrian pathways, picnic areas and two boat launches along the Bronx Kill at the Park's north. Access to this part of the Park will also soon be fostered by the upcoming Bronx Connector, the first at-grade crossing from the Bronx, in construction and set to open by spring 2015; RIPA has worked closely with the NYC Economic Development Corporation and the NYC Department of Parks to foster and plan for this catalytic access improvement, and anticipates being asked by NYC Parks to undertake its maintenance upon completion. This Connector will bring Bronx residents by bicycle and on foot directly to the flourishing Bronx Kill Salt Marsh and adjacent shoreline, with views out toward Long Island Sound. Considerable effort has gone into fostering both these projects, and to planning for increased birding, boating, fishing and other events upon their completion, including with partners like Rocking the Boat, the Urban Park Rangers and NYC Audubon. Finally, RIPA is working with the Office of the Bronx Borough President, New Yorkers for Parks, Bronx Community Board 1 and others to help foster improved bicycle and pedestrian travel through the adjacent South Bronx neighborhoods. This is an historic moment for Bronx residents and an opportunity to open this end of the Park and to exponentially increase interest in and stewardship of its natural resources.

Outcomes

- Describe and quantify progress towards achieving the conservation activities described in your original proposal. (Quantify using the approved metrics referenced in your grant agreement or by using more relevant metrics not included in the application.) Outcomes are defined as the longer-term or "big picture" environmental result(s) that you expect will ultimately occur as a result of a particular activity or activities. For projects with continuing long-term benefits (such as riparian buffer plantings) you may want to estimate the environmental benefits after a set period of time (say, five years). For studies you should describe the usefulness of the data to applied resource management or it role in developing new tools or techniques for applied resource management.

  - Our hosting of over 2200 students was a 70% increase in participation from 2012. In the longer term, we hope to continue to serve this number and to build on strong relationships with the participating schools. With further opening of access from the Bronx, we may be able to secure additional funding for staff to take more advantage of the proximity to the Bronx Kill Salt Marsh and shoreline.

  - Hiring of a Volunteer Coordinator in 2013 should help us increase volunteerism, going forward. New focus on the Bronx Kill by volunteers, along with increased access, is already bringing additional scheduled volunteer events along our northern shoreline.

  - We expected to plant 7,000 Spartina plugs but ultimately ended up planting 3,500. These 3,500 plugs will help preserve the marsh and filter and clean water, hopefully indefinitely. More plugs can and will be added as needed and as planting space becomes available in season in 2014.

  - We spent some of the funds initially reserved for Spartina on purchasing 1,280 extra native upland plugs for our newly restored buffer zones. This served to reduce run off into the marshes and provide additional textured habitat. Runoff caused by the island's many impermeable surfaces has also been noticeably reduced with the new infusion of plant material. We can expect the reduction in runoff to increase over time as the material becomes more established in their new soils. The addition of upland perennial plugs helps to out-compete invasive species, provide diverse yearlong sources of food for birds and other wildlife, and allows the habitat to mature more sustainably. Over the next five years we expect that the groundwork laid this year will develop into a self-sustaining mature upland region.

  - We were able to install 200 shrubs and trees, the long-term benefits of which include increased nesting and foraging opportunities for avian species, particularly species that require woody vegetation near the coast such as our Black Crown Night Herons. The newly planted trees and understory also provide full season protection from sun and rain and visual interest for public appreciation. These long lived but slow

growing organisms require foresight and planning for long term benefits. We anticipate that this layered ecosystem will continue to last and build upon itself indefinitely, with responsible care. We also anticipate increased habitat use by and viewing of wading and foraging birds, starting in 2014 and building as the habitat matures.

- We planted 1780 upland plugs in 2013, which will help to reduce the impact of runoff from our large parking lots into the salt marsh areas. This improvement should address runoff issues for the coming 5 years, and serves as a model for additional future runoff management elsewhere on the Island. (See fourth bullet point, above.)

Briefly explain differences between what actually occurred compared to what was projected to occur.

- We realized our goal for students served during the week was close but somewhat unreasonable. Our numbers for 2014 are now set to remain steady at 2200.

- Our goal for volunteerism was interrupted by staff turnover, yet still represented an increase over time; we have strong mechanisms now in place and the capacity to continue to responsively and responsibly manage this growth in 2014 and beyond.

- We replaced lowland plantings with upland plantings due to the need to improve buffer zones and reduce runoff.

- Our tree plantings were reduced somewhat due to staff turnover and injuries.

Provide any further information (such as unexpected outcomes) important for understanding project activities and outcome results.

- One of the biggest challenges we faced this year was having our seasonal crew and manager from the spring leave and a new team brought on board. Given the difficulties of transitioning, the new team was able to keep up an exceptional pace of meeting metrics despite not having the initial connections and understanding that were intended in reaching successful metrics.

3. Lessons Learned

Describe the key lessons learned from this project, such as the least and most effective conservation practices or notable aspects of the project's methods, monitoring, or results. How could other conservation organizations adapt their projects to build upon some of these key lessons about what worked best and what did not?

- One method we used for phragmites removal was to cut all stems multiple times before they went to flower; our intention was to stress out the rhizomes, open light for new seeds/plants, and control spread. Over three years we have been effective in controlling the spread in our managed plot areas. It appears as if there is not enough new genetic material in the soil to compete with Phragmites. In the future, as we remove, we will seed and plant the areas.

- Using volunteers can be an efficient way to plant and weed beyond what an experienced but small crew can achieve. Volunteers however need to be carefully supervised when working in sensitive habitats. Crew must ensure that the only undesirable species are removed and they are disposed of properly with minimal opportunity for seed/genetic dispersal.

- A major issue for the Bronx Kill, given its proximity to our sports fields, was the passive intrusion from athletes, picnickers and other visitors who would trample new plantings, break branches, and exacerbate erosion. By placing signage along the wetland zones and speaking with patrons we were able to better inform the public and reduce undesired activity that was damaging the space.

4. Dissemination

Briefly identify any dissemination of lessons learned or other project results to external audiences, such as the public, governmental agencies, educational entities, scientific, community-based and conservation organizations.

- Throughout the grant period the Natural Areas Manager and crew hosted tours and tabled at events throughout the region disseminating our work and understanding of Randall's Island's urban estuary habitat. We hosted Columbia University and Fordham University's marine ecology students. Groups from NYC Audubon and New York Botanical Garden came for more specialized birding and plant id tours with particularly discussion on the restored state of the island's habitats. Through our regularly monitoring we are able to share our data with Audubon, NY/NJ Baykeeper, the Harbor School, and the DEC. In addition to hosting groups and sharing our data to support larger regional research projects, we go into the community to share our work and bring more students to learn from our natural areas. Some of the outreach work we've done this year includes tabling at the Metropolitan Waterfront Alliance's City of Water Day, the NYS Department of Health's Hooked On Our Waters, Dream Charter School's Community Health Day, and Lexington Academy's Open House for Families.

5. Maintenance and Management

Describe specific provisions for long-term maintenance, management and protection, as appropriate, associated with project (i.e., maintenance of debris-catching devices, LWD jams, or removing blockages etc.)?

- Our long term stewardship goal is continuing to build stewards from the community with strong invested interest in the property. Through continuing our outreach and event efforts we will be able to provide increasing opportunities for the public to access their waterways and gain a deeper more interconnected understanding of how we have shaped our environment and what we can do to enhance our ecological resiliency. Based on successes from this grant we have planned an outdoor career camp for high school students, offering weekly work days for dedicated individual volunteers, encouraging and recruiting more sports leagues that use our sports fields to contribute to the islands ecologic restoration.

6. Partners:

Describe the contribution of any partnering organization to the project or new partnerships that were developed as a result of the project?

- Con Edison- A long time supporter of the Wetlands Stewardship Program was able to bring 100 volunteers to help remove 3,000 lbs of trash and debris from the Bronx Kill.

- Riverkeeper- A new partner, was able to recruit several corporate volunteer groups and encourage its own membership to come out for our regular volunteer days

- NYC Audubon hosts and RIPA supports seasonal migration walks on the island.

- Cornell Lab of Ornithology- Provides real time citizen science data on birds. Natural Areas has utilized this community, data, and resources to help support increased birding on an increasing popular site, the Bronx Kill.

- Increased Bronx Kill programming is being developed in communication with groups including Rocking the Boat, the Urban Park Rangers and NYC Audubon. Improved visitor access to the site from the South Bronx via the new Bronx Connector is being fostered in partnership with the NYC Economic Development Corporation, the NYC Department of Parks & Recreation, the Office of the Bronx Borough President, Bronx Community Board 1 and New Yorkers for Parks.

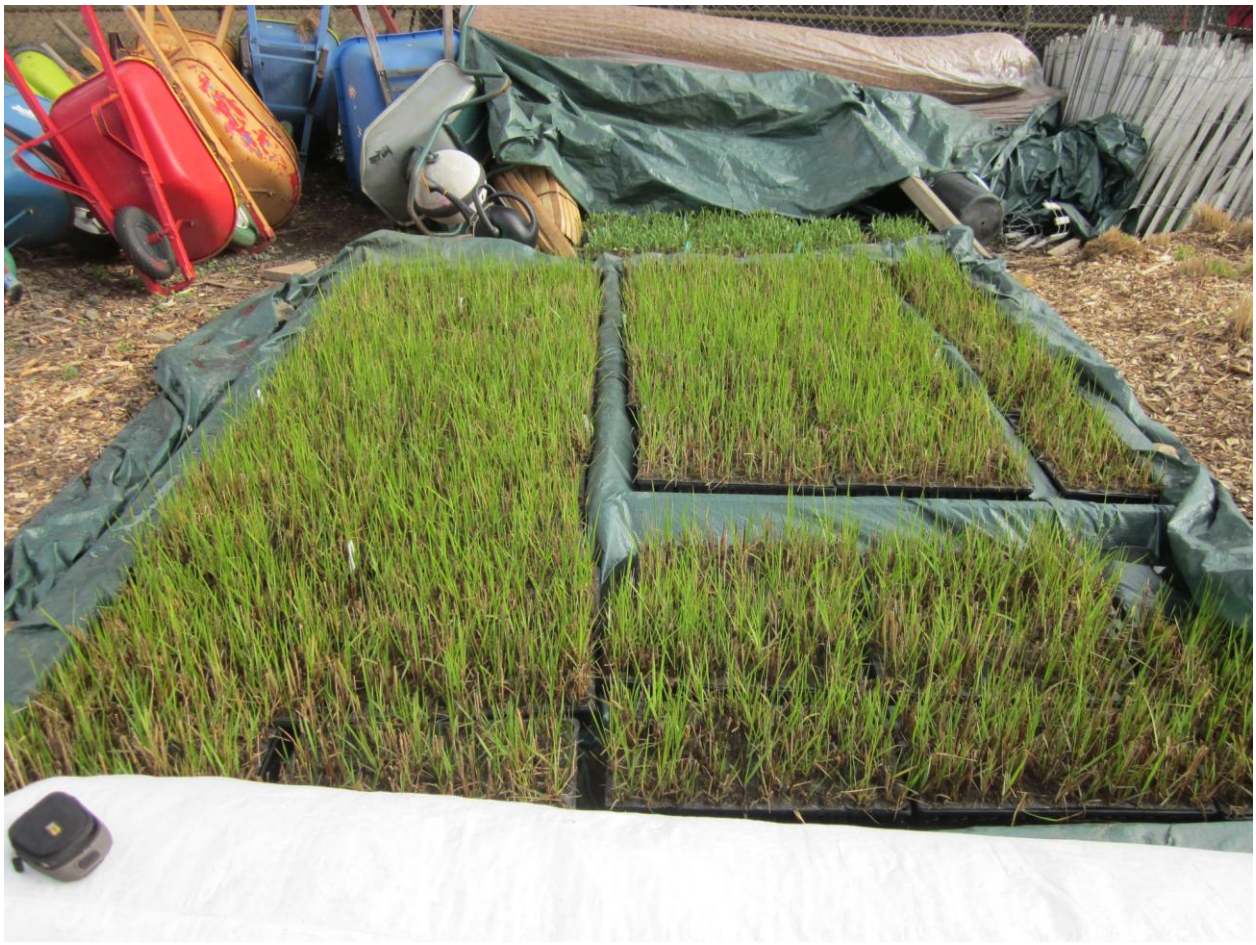
7. Project Documents

Include in your final programmatic report, via the Uploads section of this task, the following:

- 2-5 representative photos from the project. Photos need to have a minimum resolution of 300 dpi;
- report publications, GIS data, brochures, videos, outreach tools, press releases, media coverage;
- any other project deliverables per the terms of your grant agreement and in your original proposal.

POSTING OF FINAL REPORT: *This report and attached project documents may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its final report or project documents contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall clearly mark all such potentially protected materials as "PROTECTED" and provide an explanation and complete citation to the statutory or regulatory source for such protection.*


NEW YORK POST



Randall's Island Park Alliance

Wetlands Stewardship Program 2013
Attachments

Wetlands Stewardship Program 2013

I. Youth Education and Stewardship

a. Overview

Waterfront Stewardship Program 2013 Review	
Total Visits	183
Total Groups	29
Total Students	2217
Total People	2517
Total Hours	218

Table 1 shows annual totals for the Wetlands Stewardship Program in 2013

Education Highlights

- **Expanded our middle school programming** by partnering with the **Billion Oyster Project**
- We have nearly completed **aligning our programming to NYC/NYS, STEM, and Next Gen standards.**
- **Revaluated the curriculum**, through consultation with professional educators, to provide a **more effective and engaging learning experience.**
- We saw a **70% increase in participation in 2013** compared to 2012. There has been a **48% percent overall increase** in program participation since 2011.

b. Charts

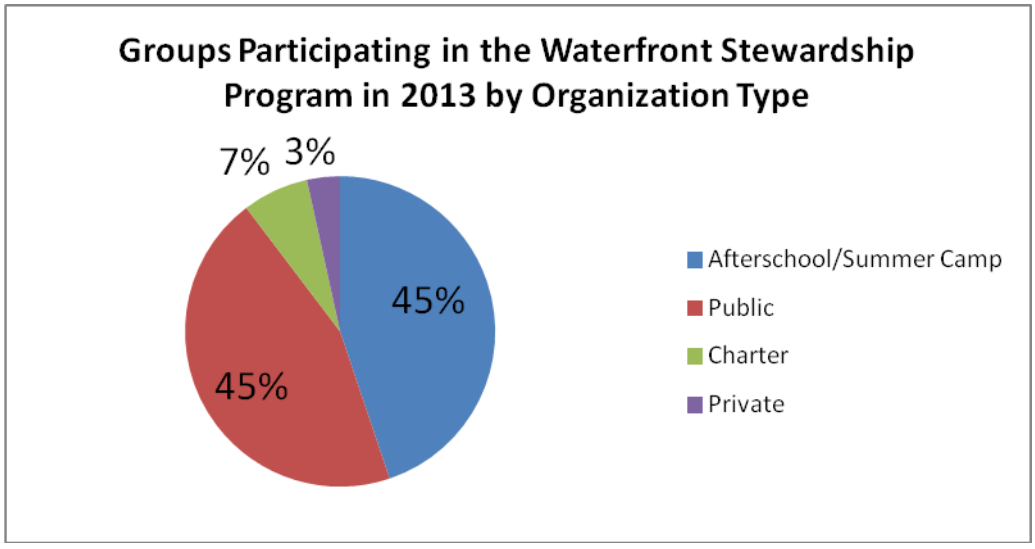


Chart 1 shows the breakdown of groups that participated in the Waterfront Stewardship Program 2013 by organization type. Percentages are representative of each group being counted once for the year.

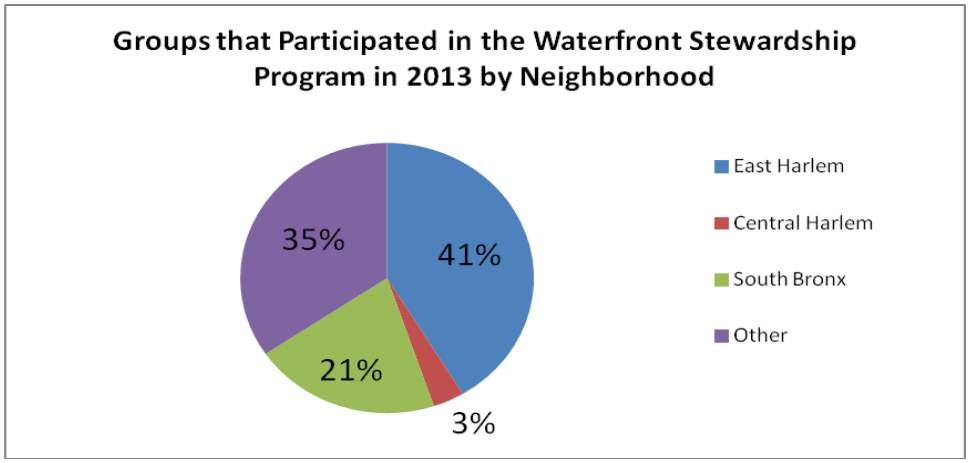


Chart 2 shows the percentage for the neighborhood of origin for each group that participated in the Waterfront Stewardship Program in 2013. Percentages are representative of each group being counted once for the year.

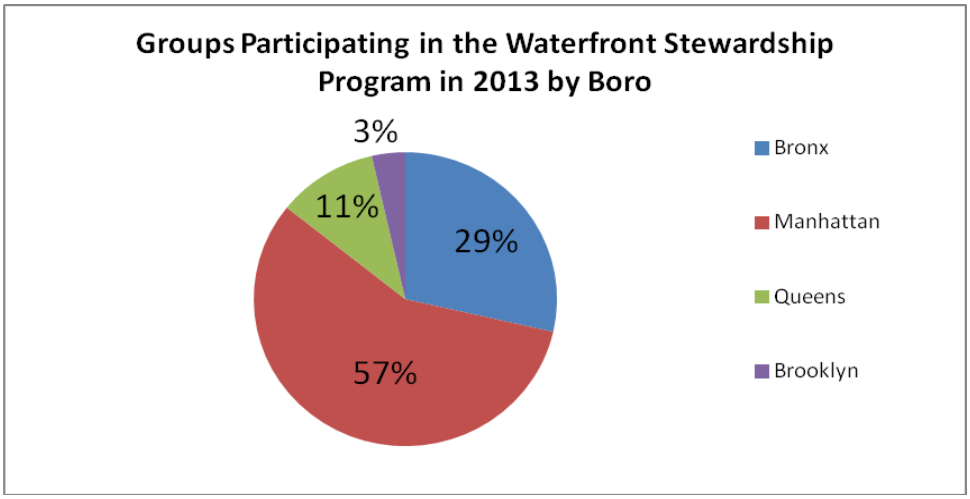


Chart 3 shows the breakdown of groups that participated in the Waterfront Stewardship Program 2013 by borough of origin. Percentages are representative of each group being counted once for the year.

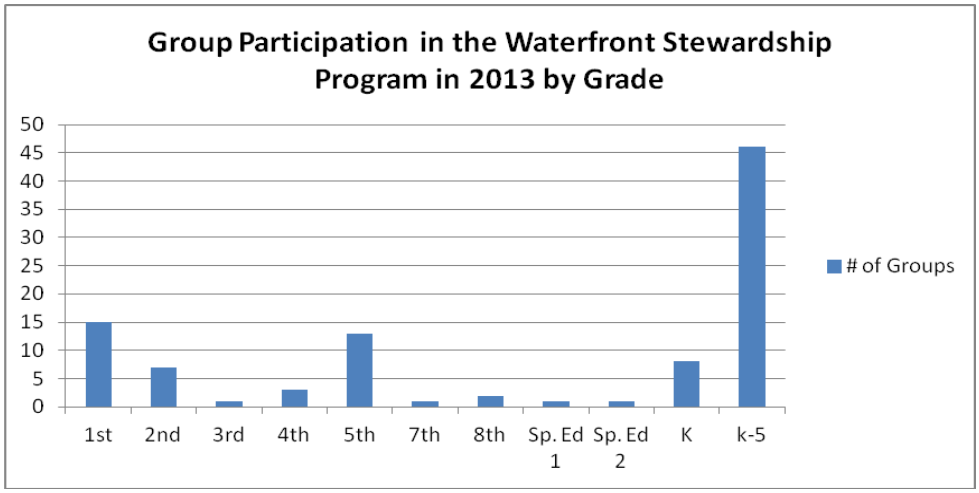


Chart 4 shows the number of visits to the Waterfront Stewardship Program in 2013 by grade.

C. Evaluation

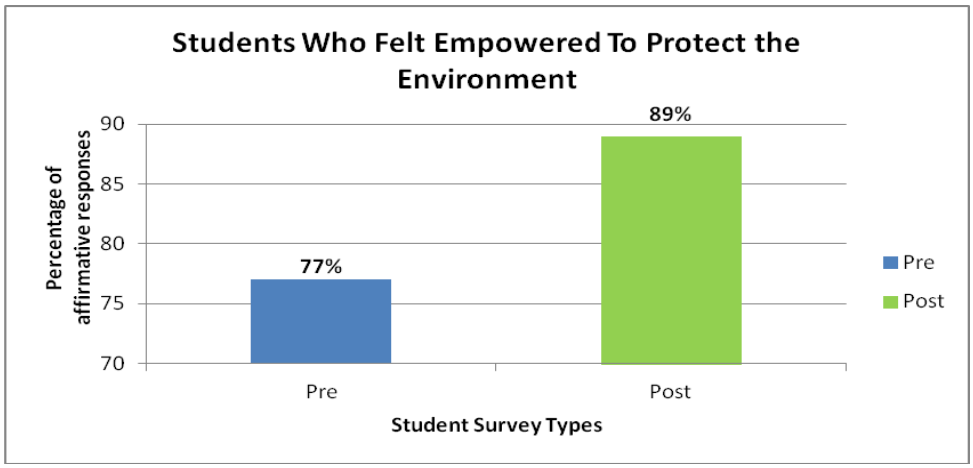


Chart 5 illustrates the 12% increase in affirmative student responses to the Waterfront Stewardship Program's pre and post survey question, "I can do something to protect the environment"

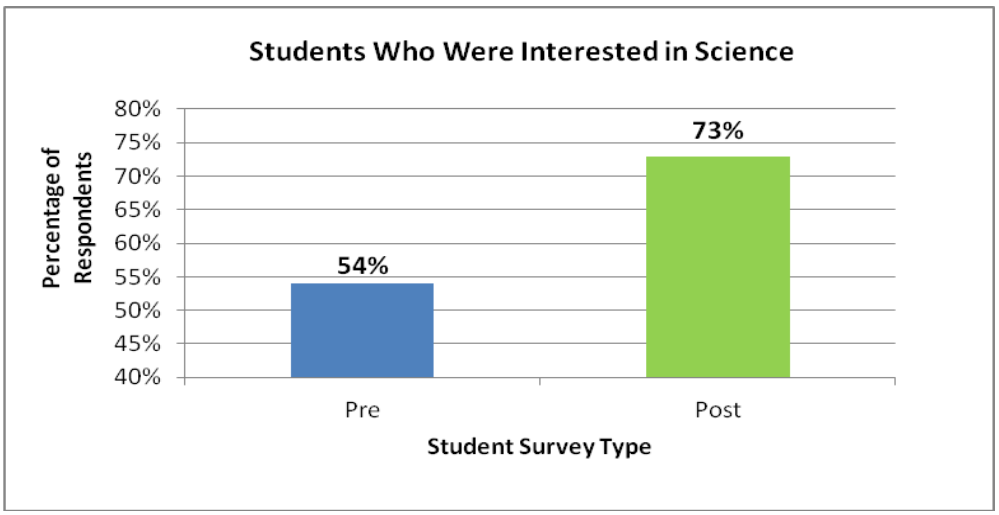


Chart 6 illustrates a 19% increase in students who were interested in science as a profession, as indicating on the Waterfront Stewardship Program's pre and post survey question asking if they wanted to be a scientist

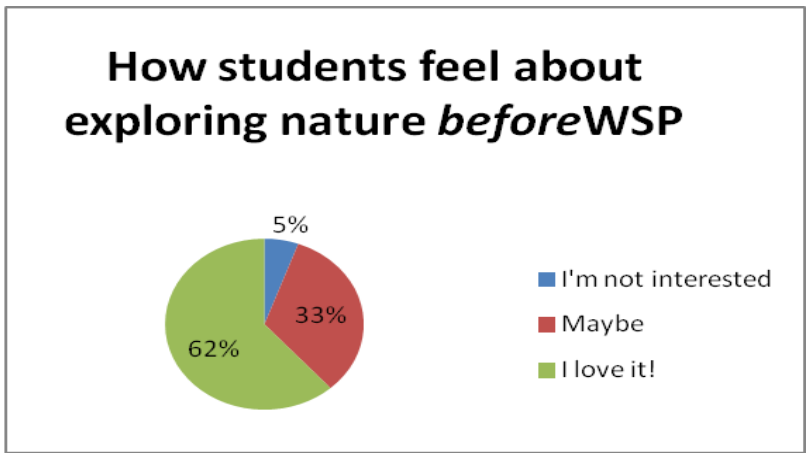


Chart 7 depicts the responses of students who were asked how they felt about exploring nature *before* participating in the Waterfront Stewardship Program

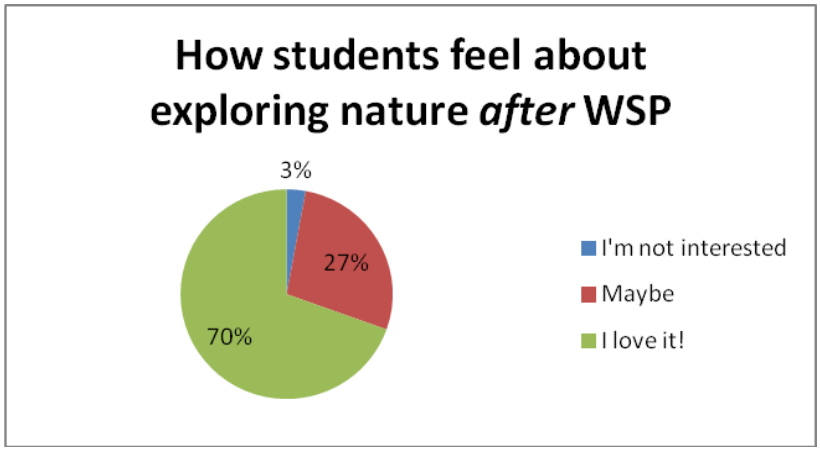


Chart 8 depicts the responses of students who were asked how they felt about exploring nature *after* participating in the Waterfront Stewardship Program. This chart shows an 8% increase in students loving to explore nature after participating.

II. Maintenance, Monitoring and Volunteerism

a. Maintenance

Maintenance Highlights

- **Completed planting** on the newly constructed **Icahn Events Space Pathway**. New plantings **function as a rain garden** (second on the island; both constructed by Natural Areas) and **upland habitat.**
- **Removed all Black Locust, Cottonwood, Phragmites, and Japanese Knotweed** from Little Hell Gate salt marsh and the **Bronx Kill salt marsh.**
- **Uncovered the whole length of Freshwater pathway** from invasive inundation. Cut down 2-3 year old invasive Mulberry, Black Locust, Bull Thistle, Cottonwood, mugwort, vetch, and gallium.

b. Volunteers

Natural Areas 2013 Volunteer Overview	
Number of Volunteers	475
Number of Volunteer Events	32
Total Volunteer Hours	1634

Volunteer Highlights

- **New weekly volunteer work day** with the Natural Areas Crew every Thursday
- Creation of **new service learning opportunities** for students groups interested in volunteering
- **New partnership with Riverkeeper** to help bring interested volunteer groups
- Over **3,000 lbs of trash were removed** during clean ups this year
- Planted over **5,500 native plugs and 52 native trees** and shrubs in the natural areas
- The Natural Areas **volunteer program has seen a 22% increase in participation since 2011.**

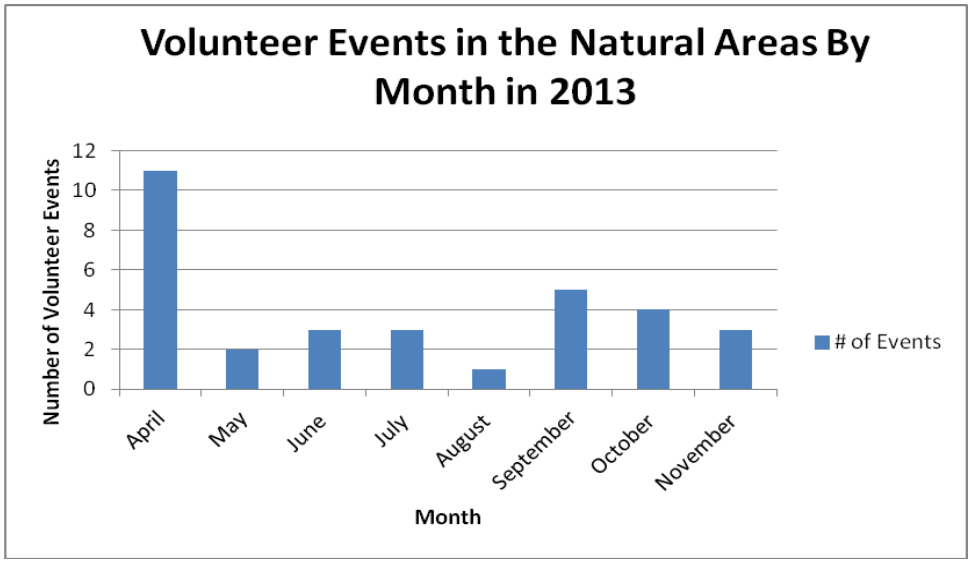


Chart 9 shows the frequency of volunteer events by month in the Natural Areas for 2013

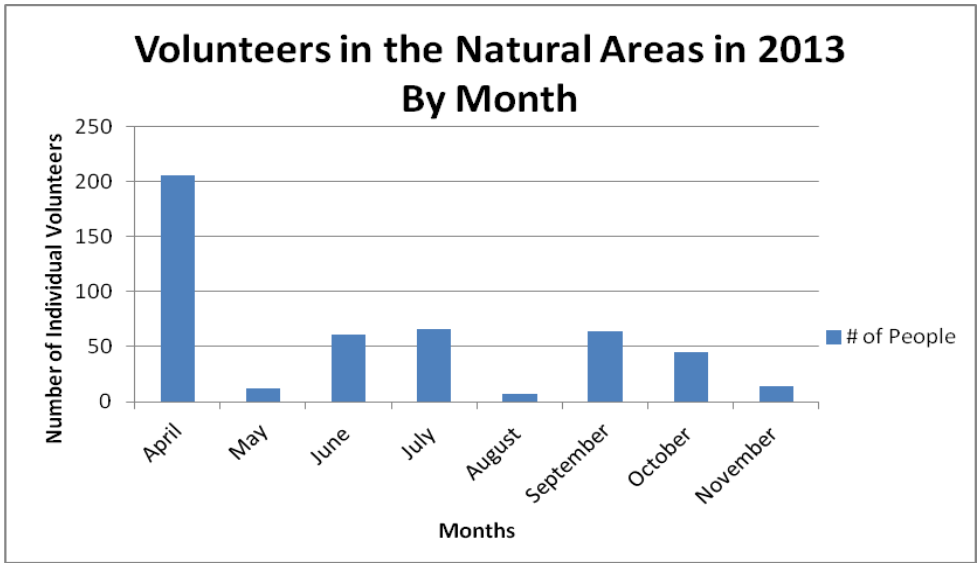


Chart 10 shows the frequency of individual volunteers in the Natural Areas, by month, for 2013

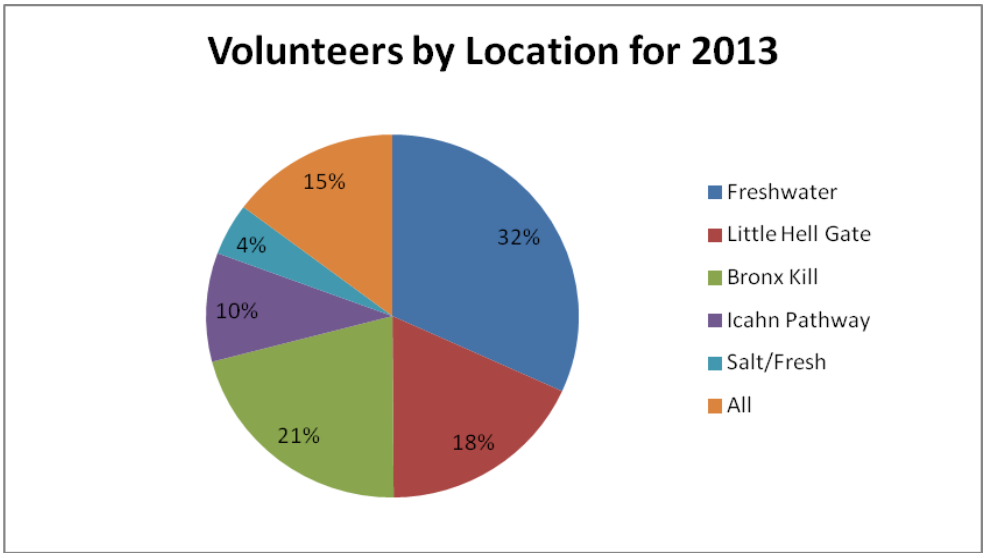


Chart 11 shows the distribution of volunteers, by location, who worked in the park for 2013

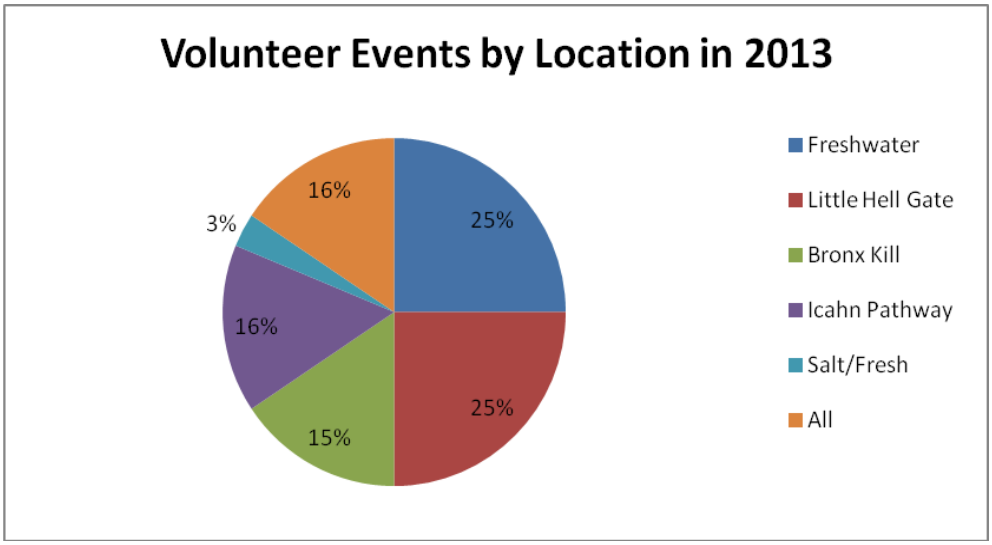


Chart 12 shows the distribution of Natural Areas volunteer events by location in 2013

III. Outreach and Community Programming

a. Overview

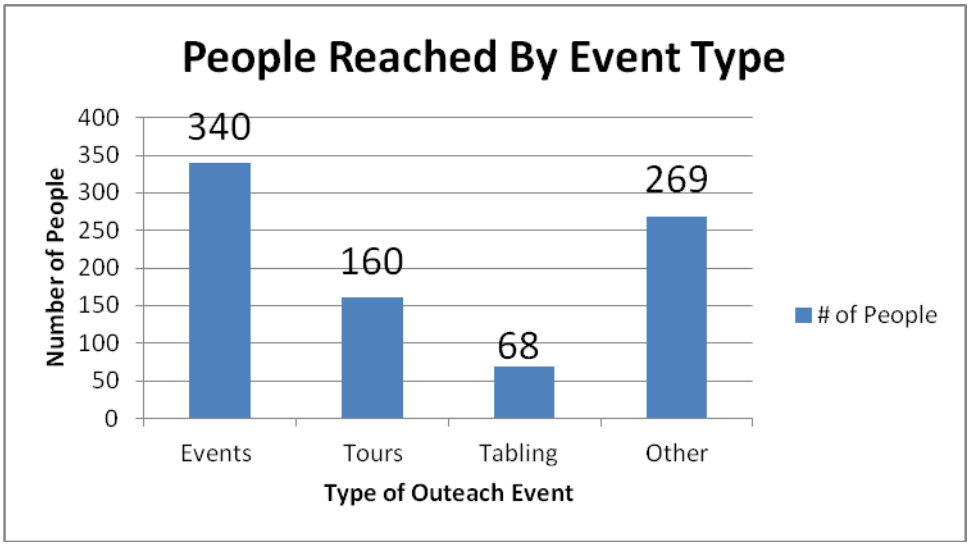


Chart 13 shows the distribution of individuals, by event type, who participated in RIPA Natural Areas outreach in 2013

Outreach Highlights

- In 2013 the **number of participants for wetland tours increased 38%** from 2012.
- All the different departments in RIPA combined their resources to create a master list of public schools and community boards creating a more effective and streamlined outreach process.
- **Two additional events** were successfully added to the Natural Areas roster this year.

b. **Wetlands Tours-** Natural Areas Crew facilitated tours for **135 individuals** with the following groups this seasons:

Table 2 is showing the names of each group that visited Randall's Island with the Natural Areas and the number of individual participants in each group

Group	Number of Participants
NYC Audubon	7
Discovery Outdoors	18
Columbia University (Matt Palmer)	61
Fordham University	16
NYBG Tour	4
Urban Park Rangers	12
Columbia University (Elisa Bone)	19
LIC Boathouse	2
Audubon Migration Walk	18
Costello City Gardens	3

c. **Events-** The Natural Areas ran three events this season for RIPA. We had Spring, Summer and Fall events. **Approximately 350 people attended Natural Area's events in 2013**.

Table 3 provides the name of the events hosted by the Natural Areas in 2013 along with the number of participants for each event and a breif description

EVENT	NUMBER OF PARTICIPANTS	DESCRIPTION
Birding Buddies	38	Participants took part in a bird walk, one led by Tod Winston of NYC Audubon and two lead by the Natural Areas Crew. We returned to the stadium for bird themed snacks and arts and crafts.
Get Hooked	120	Participants had the opportunity to fish off the South end of the island. There were interpretive fish activities, urban park rangers, local volunteer anglers, and
The Great Randall's Island Treasure Hunt	250	Participants explored different types of maps, learned how to use a compass, and combine their new skills in a compass scavenger hunt. There were refreshments, giveaways, and crafts.

d. **Tabling-** Natural Areas Crew actively tabled at public events for local organizations and regional environmental stewardship partners. Tabling includes distributing promotional materials, facilitating activities, and interpreting educational exhibits. Natural Areas **reached approximately 220 people through tabling events** in 2013.

Table 4 lists the names of the events that Natural Areas tabled at in 2013 along with an estimated number of individuals reached at each event

EVENT NAME	# of Participants
Flow '13	85
City of Water Day	60
Dream Charter School Health and Wellness Fair	50
Hooked On Our Waters	30
Lexington Academy Open House	45

MONITORING PLAN FOR THE RANDALL'S ISLAND SALT MARSH AND FRESHWATER WETLAND RESTORATION SITES

Revised 2011

The following monitoring plan is for the Randall's Island Little Hell Gate inlet salt marsh, Bronx Kill salt marsh, and freshwater wetland restoration sites. The New York State Salt Marsh Restoration and Monitoring Guidelines prepared by the NYS Department of State (NYSDOS, 2000) were used as a primary resource for developing this monitoring plan. Where necessary and appropriate, the plan was modified to include site-specific protocols.

Purpose

The purpose of this monitoring protocol is to assess the degree of success of the salt marsh and freshwater wetland restoration sites based on the established restoration performance criteria for a five-year period. Monitoring will also help to assess whether the restoration project achieved the desired character and ecological functions at the salt marsh and freshwater wetland sites, at the end of the monitoring period. Monitoring of the sites will occur for total vegetative cover, plant survival and growth, and plant colonization. Soil properties, water levels, and wildlife utilization will also be observed.

Vegetation Monitoring Protocol

Restoration Performance Criteria

The performance criteria for the restoration sites will be based on vegetation characteristics:

a) 85 percent vegetative cover of the tidal marsh and emergent areas at the salt marsh and freshwater wetland sites, respectively, within five years of initial planting (by both planted and volunteer species); and
b) Minimal re-establishment of undesirable invasive vegetation to ten percent or less of each of the total marsh and emergent areas.

Monitoring at the wetlands will include an initial post-construction assessment following completion of plant installation and then subsequent annual monitoring for five consecutive years starting at the end of the first growing season.* A tentative monitoring schedule has been developed for all wetland sites and will be followed for the next five years (Figure 1).

Sampling transects will be established within the marsh and emergent areas at each site and marked to ensure that monitoring is conducted at the same locations over time. A total of four transects within the salt marsh (two in the eastern portion and two in the western portion) and three within the freshwater wetland will be established. The locations of all transects will be randomly selected prior to monitoring. For the Little Hell Gate Inlet salt marsh, transects will extend from the rock shoreline edge of the open water (~elevation 0') and terminate at the landward side of the marsh. For the freshwater wetland, transects will run perpendicularly across the site, extending from the toe of slope on the eastern side to the toe of slope on the western side. For the Bronx Kill salt marsh, transects will extend from the rock shoreline edge of open water and terminate at the landward side of the marsh at the toe of the slope. A total of four transects will be established in this marsh. Plots will be placed along transects for monitoring purposes. Three plots will be placed on each transect in the Little Hell Gate inlet salt marsh (12 plots),

two plots on each transect in the freshwater wetland (6 plots) and two plots on each transect in the Bronx Kill (6 plots). Transects and plots will be established using rebar stakes at each end point.

Methodologies for the post-construction monitoring are described below in further detail.

***Post-Construction Monitoring*:** The salt marsh transects and freshwater wetland transects will be monitored over a period of five years. Monitoring will occur in late summer of each year, preferably between the last week of August and the first three weeks of September. Care will be taken during monitoring to minimize trampling of the vegetation.

During each monitoring event, the site will be photographed along transects for visual comparison. The photograph orientation will be the same every year of monitoring. Monitoring components include the following:

Salt Marsh

Vegetation: A square-meter quadrat will be used for defining the boundaries of the sampling plot. No quadrat will be located within ten feet of another quadrat. Vegetative parameters to be observed and recorded at each quadrat include the following:

a) Plant Species Occurring and Percent Cover: Record all plant species occurring within each selected quadrat. Percent cover can be recorded as cover class categories (e.g., Braun-Blanquet method).
b) Plant Height/Stem Density/Inflorescence: Randomly select 0.25 m2 sections of each quadrat and record all living vegetative stems. Randomly select 25 live stems in the quadrat and measure from base of the plant to the top of stem in centimeters. Count all of the stems that have inflorescence.
c) Signs of Plant Disease, Predation or Disturbance: Record for each quadrat.

Soil Properties: A composite of at least one sample for each transect will be obtained and tested for soil organic matter and soil salinity.

Benthic Invertebrate Observations: During the monitoring within the salt marsh, all observations of ribbed mussels, fiddler crab burrows and other benthic invertebrates will be counted within each quadrat.

Freshwater Wetland

Vegetation: A square-meter quadrat will be used for defining the boundaries of the sampling plot. No quadrat will be located within ten feet of another quadrat. Vegetative cover at each quadrat will be determined using the point intercept method.

The point intercept method takes into account total vegetative cover by placing small transects along the $1m^2$ plot and dropping a pin at designated intervals on the transect and seeing what plant cover hits the pin. The point at which the pin hits the ground is ground cover. A ground cover hit is recorded per pin placement and can be recorded as follows:

- Bare ground is soil with particles up to ¼ inches, gravel is particles ¼" – 3 inches, rocks are particles greater than 3 inches.

- Litter is dead plant material directly covering the ground, dead perennial vegetative bases, or animal material. If a small stem or piece of litter is not considered large enough to intercept raindrop impact, the hit is the ground covering below it.
- Persistent litter is considered ¼ inch thick. If ground cover is less than ¼ inch, then it will be counted as non-persistent litter.
- Annual forbs are considered non-persistent litter cover when in contact with the ground and large enough to intercept raindrop impact.

Once the ground cover is determined, all live vegetation that touches the pin is recorded. A total of 30 pin drops will be recorded for each plot.

This method can be calculated as the percentage of hits, relative to the total number of points sampled. Total cover and percent cover of individual species will be determined for each plot. Signs of plant disease, predation or disturbance will be recorded for each plot.

Avian Monitoring Protocol

Salt Marsh

Surveys for macrofaunal and avian species will be conducted twice a year (once in June and in August) at both the freshwater and salt marsh restoration sites. Macrofaunal/avian observation points will be selected to minimize disturbance. The monitor should record observations as described below for a 3 to 4 hour period surrounding mid-tide (1.5 to 2 hours before and 1.5 to 2 hours after mid-tide).

After arriving at the observation point, the observer will for five minutes to allow birds/mammals flushed by his or her movement to come back into range. The observer will record on field sheets all macrofaunal and avian species seen and heard and their approximate orientation (in degrees) from the observer. Information for each observation point will include date, time, location, precipitation, tide level (for salt marsh), species observed, number of individuals of each species, breeding status (for avian species), and habitat where observed. Bird monitoring should not be conducted on days when there is high wind, rain, or low barometric pressure.

Waterfowl species will be monitored once annually in December. The species, abundance, general location, activities, and duration of stay will be recorded during this monitoring event.

Macrofaunal Monitoring Protocol

Salt Marsh

Monitors will record the presence, duration of stay, general location, and activity for all wading birds and all other salt marsh associated bird species. Other macrofaunal species (small mammals, horseshoe crabs, and diamondback terrapin) recorded for presence, or reasonable evidence of presence, location, and activity. This monitoring will take place during bird monitoring in June and August.

Additional Monitoring Parameters**

Sediment Accretion Rates (*Salt Marsh)*
Sediment accretion in salt marshes can be measured over time using buried marker layers composed of feldspar dust in marked sample plots throughout site. Once the plots are in place, small cores are taken at

various time intervals from each plot and the depth of the marker layer in each core is recorded. Sediment accretion rates are then calculated and expressed in centimeters per year

Finfish and Crustaceans (*Salt Marsh)*
Fish and crustacean usage of the salt marsh can be quantified through a variety of sampling techniques. Depending on availability, monitors will use minnow pots, seine nets, fyke nets, and/or throw traps to monitor usage of the tidal creek. Designated monitoring locations should be chosen and reused year after year.

Odonata (*Freshwater Wetland)*
Several visits to the freshwater wetland throughout the year are required in order to determine accurate dragonfly and damselfly usage of the site. Since different species of odonata fly during different times in the spring, summer, and fall, monitoring will occur once in mid-June, once in mid-July, and once in mid-August. Odonata are especially active during sunny, warm days so monitoring will occur on sunny days from mid-morning until late afternoon. Odonata will be captured using aerial nets and identified using hand lenses and a field guide. Photos will be taken of all dragonflies captured to correctly identify species. Larvae surveys within the freshwater pond can also be conducted during this period.

Water Quality (*Salt Marsh)*
Several water quality parameters can be measured to determine salt marsh health. Dissolved oxygen (DO), salinity, temperature, and pH can be measured with an automated data logger. If a data logger is not available, a portable DO and pH meter and salinity refractometers can be used instead to collect samples.

Monitoring Reports
Written monitoring reports will be submitted to the NYSDEC, USACE-NYD and NYSDOS by December 1 of each of the five monitoring years. (Since monitoring is not required, review and approval of these reports is not necessary.) Monitoring data, labeled photographs, and a brief summary of the collected data will be included in each report. At the end of the five years, a summary report of the entire monitoring and maintenance efforts and results will be compiled and submitted to the same three agencies.

**The above monitoring plan was not completed for any of the sites following the first growing season. 2010 was the first vegetation monitoring event to establish permanent transects and plots that allow for reassessment on a yearly basis. Vegetation monitoring will continue at the designated plots through 2015.*

***These parameters are only to be monitored if budget and time allows.*

Figure 1. Monitoring plan for the Randall's Island Wetlands.

Monitoring Plan: Randall's Island Wetlands

TASK	MONTH											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Odonata												
Salt Marsh Bird												
Finfish and Crustaceans												
Water Quality												
Freshwater Vegetation												
Salt Marsh Vegetation & Invertebrate												
Soil Samples												
Sediment Accretion												
Wintering Waterfowl												

Date	School	# of Students	Borough	Main Contact	Grades
04/04/13	P.S. 148	27	Qns	Annemarie Schubert/Mr. Banner	5
04/05/13	P.S. 148	18	Qns	Annemarie Schubert/Ms. Menacian	5
04/16/13	Central Park East	20	Mn	Vanessa Miller	1
04/22/13	Central Park East	20	Mn	Vanessa Miller	1
04/26/13	P.S. 204- Morris Heights School	22	Bx	Bonnie Michaelson	2
04/30/13	P.S. 87	23	Mn	Rebecca Gonzalez	1
05/01/13	P.S. 375	16	Mn	Lissette Caesar	1
05/02/13	Mosaic Prep Academy	7	Mn	Lissette Caesar	1 (sp ed)
05/03/13	Mosaic Prep Academy	12	Mn	Lissette Caesar	2, 3 (sp ed)
05/07/13	P.S. 112 Bronxwood	26	Bx	Lisa Singer	2
05/07/13	P.S. 112 Jose Barbosa	16	Mn	Susan Morelli	K
05/08/13	P.S. 112 Bronxwood	18	Bx	Lisa Singer	2
05/09/13	P.S. 112 Bronxwood	25	Bx	Lisa Singer	2
05/10/13	P.S. 49	27	Qns	Eve Spann-Ms. Garcia & Ms. Lafontane	5
05/13/13	P.S. 49	18	Qns	Eve Spann-	5
05/14/13	P.S. 375	18	Mn	Lissette Caesar-Ms.	4
05/15/13	TAG Young Scholars	25	Mn	Janette D. Cesar, Principal; Mr. Malloy	1
05/16/13	Children's Aid College Prep Charter	23	Bx	Ife Lenard-Abbey Carte	1
05/17/13	Children's Aid College Prep Charter	21	Bx	Ife Lenard	K
05/17/13	Mosaic Prep Academy	44	Mn	Lissette Caesar	3
05/21/13	Central Park East	18	Mn	Vanessa Miller	1
05/23/13	Children's Aid College Prep Charter	21	Bx	Ife Lenard	K
05/24/13	P.S. 87	23	Mn	Rebecca Gonzalez	1
05/29/13	Children's Aid College Prep Charter	23	Bx	Ife Lenard-Abbey Carte	1
05/29/13	Mosaic Prep Academy	22	Mn	Lissette Caesar	4
05/30/13	Children's Aid College Prep Charter	24	Bx	Ife Lenard-Abbey Carte	1
05/30/13	TAG Young Scholars	26	Mn	Janette D. Cesar, Principal; Ms. Browno	K
05/31/13	P.S. 56	19	Qns	Laura Devlin	5
05/31/13	TAG Young Scholars	26	Mn	Janette D. Cesar, Principal; Ms. David	2
06/03/13	Central Park East	22	Mn	Vanessa Miller	1
06/04/13	TAG Young Scholars	22	Mn	Janette D. Cesar, Principal; Ms. Diaz	K
06/05/13	TAG Young Scholars	28	Mn	Janette D. Cesar, Principal;, Ms. Jaffri	1
06/07/13	TAG Young Scholars	48	Mn	Janette D. Cesar, Principal; Ms. Tabrizi & Ms. Liu	2

06/11/13	P.S. 112 Jose Barbosa	20	Mn	Jessica Franco	K-CTT
06/12/13	P.S. 56	24	Qns	Laura Devlin	5
06/12/13	P.S. 56	24	Qns	Laura Devlin	5
06/14/13	P.S. 344	24	Bx	Bernadette L Wilson	4
06/14/13	P.S. 56	24	Qns	Laura Devlin	5
06/21/13	I.S. 50	13	Mn	Joanna Feliz	7
07/08/13	Harlem RBI- RISC	20	Mn	Lou Schlanger	K-5
07/08/13	Harlem RBI- RISC	20	Mn	Lou Schlanger	K-5
07/09/13	Harlem RBI- RISC	20	Mn	Lou Schlanger	K-5
07/09/13	Harlem RBI- RISC	20	Mn	Lou Schlanger	K-5
07/15/13	Casita Maria- RISC	20	Bx	Lou Schlanger	K-5
07/15/13	Casita Maria- RISC	20	Bx	Lou Schlanger	K-5
07/15/13	Children's Aid- RISC	15		Lou Schlanger	K-5
07/15/13	Children's Aid- RISC	15		Lou Schlanger	K-5
07/16/13	Dream Chater- RISC	12	Mn	Lou Schlanger	K-5
07/16/13	Dream Chater- RISC	12	Mn	Lou Schlanger	K-5
07/17/13	Casita Maria- RISC	12	Bx	Lou Schlanger	K-5
07/17/13	Casita Maria- RISC	15	Bx	Lou Schlanger	K-5
07/17/13	Harlem Childrens Zone - RISC	15	Mn	Lou Schlanger	K-5
07/18/13	Abraham House- RISC	13	Bx	Lou Schlanger	K-5
07/18/13	Abraham House- RISC	11	Bx	Lou Schlanger	K-5
07/22/13	Abraham House- RISC	12	Bx	Lou Schlanger	K-5
07/22/13	Abraham House- RISC	13	Bx	Lou Schlanger	K-5
07/22/13	Casita Maria- RISC	16	Bx	Lou Schlanger	K-5
07/22/13	Casita Maria- RISC	28	Bx	Lou Schlanger	K-5
07/23/13	Harlem RBI- RISC	20	Mn	Lou Schlanger	K-5
07/23/13	Harlem RBI- RISC	20	Mn	Lou Schlanger	K-5
07/24/13	Casita Maria- RISC	20	Bx	Lou Schlanger	K-5
07/24/13	Casita Maria- RISC	20	Bx	Lou Schlanger	K-5
07/24/13	Casita Maria- RISC	15	Bx	Lou Schlanger	K-5
07/24/13	Casita Maria- RISC	23	Bx	Lou Schlanger	K-5
07/25/13	La Isla Del Barrio- RISC	20	Mn	Lou Schlanger	K-5
07/25/13	La Isla Del Barrio- RISC	20	Mn	Lou Schlanger	K-5
07/26/13	Brooklyn Community Services	32	Bk	Lou Schlanger	K-5
07/29/13	Casita Maria- RISC	17	Bx	Lou Schlanger	K-5
07/29/13	Casita Maria- RISC	28	Bx	Lou Schlanger	K-5
07/29/13	East Harlem Tutorial Program - RISC	8	Mn	Lou Schlanger	K-5

07/29/13	East Harlem Tutorial Program - RISC	10	Mn	Lou Schlanger	K-5
07/30/13	Harlem RBI- RISC	15	Mn	Lou Schlanger	K-5
07/31/13	Harlem Childrens Zone - RISC	20	Mn	Lou Schlanger	K-5
07/31/13	Harlem Childrens Zone - RISC	21	Mn	Lou Schlanger	K-5
07/31/13	P188x - RISC	23	Bx	Lou Schlanger	K-5
08/02/13	Brooklyn Community Services	30	Bk	Lou Schlanger	K-5
08/05/13	Casita Maria- RISC	12	Bx	Lou Schlanger	K-5
08/05/13	Casita Maria- RISC	12	Bx	Lou Schlanger	K-5
08/05/13	Harlem RBI- RISC	20	Mn	Lou Schlanger	K-5
08/06/13	Real Kids- RISC	12	Mn	Lou Schlanger	K-5
08/07/13	Dwight Summer Camp	21	Mn	Lou Schlanger	K-5
08/07/13	East 54th St Rec Center- RISC	22	Mn	Lou Schlanger	K-5
08/07/13	East 54th St Rec Center- RISC	23	Mn	Lou Schlanger	K-5
08/07/13	Harlem Childrens Zone - RISC	15	Mn	Lou Schlanger	K-5
08/12/13	Dwight Summer Camp	14	Mn	Lou Schlanger	K-5
08/14/13	LEAP Program	30	Bx	Lou Schlanger	K-5
10/01/13	In-Class P.S. 56	110	Qns	Laura Devlin	5
10/07/13	P.S. 56 Salt Marsh Exploration	26	Qns	Laura Devlin	5
10/08/13	P.S. 56 Salt Marsh Exploration	24	Qns	Laura Devlin	5
10/15/13	P.S. 56 Salt Marsh Exploration	24	Qns	Laura Devlin	5
10/15/13	P.S. 56 Salt Marsh Exploration	24	Qns	Laura Devlin	5
10/21/13	TAG Young Scholars B.O.P	53	Mn	Chaundra Galbiati	8
10/23/13	In-Class Central Park East	50	Mn	Len Soriano	1
10/25/13	In-Class P.S. 112	11	Mn	Susan Morelli	K
10/29/13	St. Anns Catholic School	26	Mn		K
10/30/13	Central Park East	24	Mn	Len Soriano	1
10/31/13	Central Park East	26	Mn	Cristal Waterman	2
11/01/13	P.S. 112 Jose Barbosa	11	Mn	Susan Morelli	K
11/06/13	Plant-Power Central Park East	24	Mn	Len Soriano	1
11/07/13	TAG Young Scholars B.O.P.	53	Mn	Chaundra Galbiati	8

Date	Start Time	End Time	Event	# of People
04/06/13	11:00 AM	4:00 PM	Columbia Community Outreach	22
04/07/13	9:00 AM	12:00 PM	Beta Alpha Psi/Alpha Gamma- Baruch College	13
04/12/13	2:00 PM	5:00 PM	Mercy College	14
04/18/13	10:00 AM	1:00 PM	NY Cares	3
04/20/13	9:00 AM	12:00 PM	Hands On New York- NY Cares	27
04/20/13	9:00 AM	12:00 PM	New Shul	18
04/23/13	9:00 AM	12:00 PM	NY Cares	7
04/25/13	9:45 AM	11:30 AM	Abraham Joshua Heschel High School	36
04/27/13	2:00 PM	4:00 PM	Marriot by Courtyard, NYU Frat, Individuals	25
04/29/13	10:00 AM	2:00 PM	Baruch College High School	28
04/30/13	10:00 AM	2:00 PM	Yeshiva University High School for Girls	13
05/03/13	9:00 AM	12:00 PM	Manhattan East Middle School	6
05/28/13	9:00 AM	12:00 PM	NY Cares	6
06/11/13	9:00 AM	12:00 PM	NYIT, NY Cares, CUNY John Jay	14
06/19/13	9:30 AM	1:30 PM	AMNH- Museum Education and Employment Program	35
06/25/13	9:00 AM	12:00 PM	NY Cares	12
07/09/13	9:00 AM	12:00 PM	Barclay's	38
07/23/13	9:00 AM	12:00 PM	NY Cares	7
07/27/13	9:00 AM	12:00 PM	Con Edison	21
08/27/13	8:00 AM	12:00 PM	NY Cares	7
09/07/13	8:00 AM	1:00 PM	Con Edison	23
09/21/13	10:00 AM	2:00 PM	Get Hooked Volunteers	9
09/24/13	9:00 AM	12:00 PM	NY Cares	4
09/25/13	9:00 AM	12:00 PM	Carlyle Group	9
09/26/13	10:00 AM	1:00 PM	Bazaar Voice	19
10/03/13	9:00 AM	12:00 PM	NAC Clean Up	1
10/11/13	10:00 AM	1:00 PM	Littoral Society Clean Up	7
10/15/13	10:00 AM	12:00 AM	Riverkeeper Clean Up	13
10/29/13	1:00 PM	4:00 PM	HSBC- Riverkeeper	24
11/02/13	1:00 PM	5:30 PM	Habitat Planting	1
11/09/13	10:00 AM	1:00 PM	Level The Field	11
11/13/13	9:00 AM	12:00 PM	NAC Clean Up	2





Wetlands Stewardship Program

The Randall's Island Wetlands Stewardship Program teaches children about wetland ecology and enables children to experience nature through hands-on learning. During the field trip, students will have the chance to explore a restored salt marsh or freshwater wetland on Randall's Island. Students will gain a greater respect for the environment and a greater understanding of what it means to be an environmental steward.

Program Description

The Randall's Island Wetlands Stewardship Program consists of a Pre-Visit and a Field Trip.

Pre-Visit

During the pre-visit, the Natural Areas Manager and Natural Areas Crew will visit your classroom prior to the field trip to provide a short (45-60 minute) introductory lesson to your students. During the classroom session students will be shown a slide show that will provide them with an introduction to wetlands (answering questions like: What is a wetland? What are different types of wetlands? Why are wetlands important?). The classroom session will also introduce students to their Wetlands Stewardship Activities Booklets (grades 3-6). During this session students will complete activities in the booklets that will help them practice their scientific observational skills and learn the new vocabulary associated with wetland ecology.*

**We highly recommend the pre-visit lesson because it provides students with enough background so that they are prepared for their field trips. Please notify the Natural Areas Manager if you are unable to take part in the pre-visit portion of our program.*

Field Trip

The Randall's Island Wetlands Stewardship Program consists of three types of field trips:

1. Salt Marsh Exploration
2. Freshwater Wetlands Exploration
3. In-Depth Wetlands Exploration*
    a. The World is your Oyster: Oyster Gardening Program
    b. Plant Power: The Importance of Plants & Plant Communities to Humans & the Environment
    c. It's Buzz Worthy: The Secret Life of Insects
    d. Water is What Matters: NYC Watersheds and Water Quality
    e. Feathered Friends: Birds of the Wetlands & Woodlands

**All participants are recommended to begin with either the Salt Marsh or Freshwater Wetlands field trip before scheduling an In-depth Wetlands Exploration course.*

Field trips last for approximately 90 minutes (based on bus schedule, between the hours of 10:00am-1:00pm daily). All field trips will begin and end at a classroom located in Icahn Stadium. Students will be taught in the classroom and guided on the field trip by the Natural Areas Manager and/or a member of her crew. As part of the hands-on learning experience, students will use binoculars, magnifying glasses, fish nets, and traps to examine animals and plants in the wetlands. Students will have the chance to get up close and personal with fish, crabs, snails, insects, oysters and plants!

Cancellations

Field trips are held rain or shine unless there is dangerous weather. In the event of severe weather, outdoors portions of the field trip will be cancelled and the entire program will be replaced with indoor activities. If this is not preferred, the teacher may choose to reschedule the field trip if there are dates available. Please call the Natural Areas Manager on the morning of the day of the trip to confirm whether the outdoor portion of the field trip is still scheduled. If you are unable to attend your scheduled field trip you must notify the Manager as soon as possible.

Scheduling

For further information on the program or to schedule a visit to the wetlands, please contact:
Christopher Girgenti, Natural Areas Manager
Phone: 212-860-1899 ext. 309, Email: Christopher.Girgenti@parks.nyc.gov

When scheduling your visit, please provide the following information:

1. Name of the teacher responsible for the group with their cell phone number & email address;
2. School/Program name, address, and phone number;
3. Grade level for your group;
4. Number of students in your group;
5. Dates you would like to schedule for the Pre-Visit and Field Trip;
6. Preferred arrival and departure times;
7. Names of other teachers/assistants that will be attending the field trip;
8. Any special educational or physical needs of students in your group;
9. Whether your students will be eating lunch on the Island.

Once you have scheduled your trip you will receive a copy of the Wetlands Stewardship Activities Booklet, Randall's Island Liability & Photo Release Form, Directions to Randall's Island, and Program Description & Welcome Letters for Parents & Teachers. Please note, Randall's Island Liability & Photo Release Forms MUST be signed by parents/guardians of every student attending a field trip.

Post-Visit

After you finish the field trip we may ask you and your students to complete questionnaires regarding the program. We particularly welcome constructive criticism from teachers.

Thank you and we look forward to seeing you at the Randall's Island Wetlands!
Want to learn more about the Randall's Island Wetlands? Visit www.randallsisland.org





Wetlands Stewardship Program

Hello Parents/Guardians!

Welcome to Randall's Island and thank you for participating in the Randall's Island Wetlands Stewardship Program! We are very excited to welcome your children to our wetlands. We hope that while they are here your children will have a fun-filled day of hands-on learning. In order for everyone to have an enjoyable and safe time in the wetlands we suggest that students bring the following on the field trip:

- Proper clothing (clothes you don't mind students getting dirty), rain boots (if they have them or shoes they don't mind getting muddy), and a hat (if it's sunny)
- Bottle of water (although water will be provided)
- A bagged lunch or snacks (there is no convenient place on the Island to purchase food)*
- Sunscreen
- Bug spray (some will be provided)
  **Please ask your child's teacher if the class will be eating lunch on the Island.*

Please note that students will have access to a bathroom and a classroom to store their belongings. If any child requires additional items (EpiPen®, medicine, etc.) please be sure that a teacher or chaperone has these items on hand while in the field. Please note that the Natural Areas Manager and Crew are trained in CPR and First Aid and that a First Aid kit will be present during field trips.

Attached you will find the Randall's Island Park Alliance, Inc. *Liability and Photograph Release & Waiver for Minors* form. Every student participating in the Wetlands Stewardship Program **MUST** have this form signed by a parent/guardian prior to the field trip. Students who do not have this form signed on the day of the field trip will not be allowed to take part in the program. Forms must be returned to their teacher who will then provide the forms to the Natural Areas Manger.

Want to learn more about the Randall's Island Wetlands? Visit www.randallsisland.org

Thank you,
Victoria O'Neill, Natural Areas Manager
Randall's Island Park Alliance





Wetlands Stewardship Program

¡Hola Padres y tutores!

¡Bienvenido a Randall's Island y gracias por participar en el Randall's Island Wetlands Stewardship Program! Estamos muy contentos de darles la bienvenida a sus hijos a nuestros humedales. Esperamos que mientras estén aquí sus hijos tendrán un día lleno de diversión y aprendizaje práctico. Para pasar un día agradable y seguro, es aconsejable que los estudiantes traigan las siguientes cosas:

- Ropa y zapatos que se pueden ensuciar
- Un sombero para el sol
- Botellas de aqua
- El almuerzo o merienda en bolsas
- Bronceador

**Pregunten almaestro de su hijo si van a almorzar en la isla*

Los estudiantes tendrán acceso a un baño y una clase para sus pertenencias. Si algún niño requiere elementos adicionales (EpiPen®, medicina, etc.) favor de darlos al maestro o acompañante. El Gerente de Áreas Naturales y el personal están entrenados en reanimación cardiopulmunar y primeros auxilios y un botiquín de primeros auxilios estará presente durante el viaje.

Incluidos encontrarán el Randall's Island Park Alliance, Inc. Liability and Photograph Release & Waiver for Minors. Cada estudiante que participa debe tener estas formas firmadas por un padre o tutor antes del viaje. Los estudiantes que no tienen firmadas las formas no se les permitirá asistir al programa. Los formularios deben ser devueltos a la maestra que las pasará al Gerente de Áreas Naturales.

¿Quieren saber más sobre los humedales de Randall's Island? Visita nuestra pagina web www.randallsisland.org

Muchas Gracias,

Victoria O'Neill, Gerente de Áreas Naturales
Randall's Island Park Alliance

The following courses are offered as part of the Wetlands Stewardship Program. For further information about these courses please contact Christopher Girgenti, Natural Areas Manager, at 212-860-1899 ext. 309 or email: Christopher.girgenti@parks.nyc.gov.

Course 1- Salt Marsh Exploration




In 2008, the Randall's Island Park Alliance and NYC Department of Parks & Recreation restored 5 acres of salt marsh habitat to the Island. Salt Marshes are wetlands located in the intertidal zones of estuaries. Marshes provide an abundant source of food and protection from predators for a variety of wildlife, making them excellent locations for fishing, crabbing, and bird watching. Like all wetlands, salt marshes slow coastal erosion, prevent flooding, filter water of harmful pollutants, and slow global warming by converting carbon dioxide to oxygen. Due to human population growth, salt marshes have been virtually eliminated throughout the NYC coast line, including areas of the Harlem River, East River, and western Long Island Sound.

In this course, students will learn the coastal history of NYC, Long Island Sound, and Randall's Island, and what it means to restore the environment. They will learn why wetlands, and specifically salt marshes, are important, what threats exist to salt marsh survival, and what we can do to protect them. They will also learn about the animals and plants that live in this environment and their adaptations to survival. Students in grades 3-6 will be able to use their Wetlands Stewardship Activities Booklets in the field as nature journals, recording the various plants and animals they see along the way. Younger students in grades K-2 conduct observational and inferential learning while in the field and complete writing and drawing activities back in the classroom. As part of the hands-on learning experience, students will use binoculars, magnifying glasses, fish nets, and traps to find animals in the wetlands.

Course 2- Freshwater Wetland Exploration




In 2008, the Randall's Island Park Alliance and NYC Department of Parks & Recreation restored 4 acres of freshwater emergent wetland habitat to the Island. New York City once contained 224,000 acres of freshwater wetland. However, over the past century the expansion of the City has eliminated thousands of acres. The native plant-dominated freshwater wetland provides habitat for a variety of organisms, including dragonflies, damselflies and butterflies, and provides excellent feeding, resting and/or breeding habitat for birds such as red-winged blackbirds, marsh wrens, common yellowthroats, mallard ducks, swamp sparrows, and green herons, as well as small mammals, such as muskrats.

In this course, students will learn the history of NYC and Randall's Island and what it means to restore the environment. They will learn why wetlands, and specifically freshwater wetlands, are important, what threats exist to freshwater wetland survival, and what we can do to protect them. They will also learn about the animals and plants that live in this environment and their adaptations to survival. Students in grades 3-6 will be able to use their Wetlands Stewardship Activities Booklets in the field as nature journals, recording the various plants and animals they see along the way. Younger students in grades K-2 conduct observational and inferential learning while in the field and complete writing and drawing activities back in the classroom. As part of the hands-on learning experience, students will use binoculars, magnifying glasses, and traps to find animals in the wetlands.

Course 3- The World is your Oyster: Oyster Garden Program



The Randall's Island Oyster Garden Program is a partnership program with NY/NJ Baykeeper. In 2011, Randall's Island obtained a cage of 500 native juvenile Eastern Oysters (*Crassostrea virginica*) from Baykeeper which we placed in the East River adjacent to the wetlands. These animals were once abundant in the NY/NJ Harbor Estuary and western Long Island Sound but, due to years of overharvesting and pollution, they have all been eliminated. Oysters provide key ecological benefits to our wetlands and waterways: NY/NJ Baykeeper and Randall's Island Park are working hard to restore oysters to their natural habitat. This program will allow students not only to learn about oyster biology and their importance in our aquatic ecosystem, but also to collect important scientific data on their growth and development. Students will be able to use magnifying glasses, microscopes, rulers, and calipers to analyze and collect data on oysters and other reef inhabitants. Students will also make observations about the oysters in order to complete writing and drawing activities.

Course 4- Plant Power: The Importance of Plants & Plant Communities to Humans & the Environment




Plants are the backbone of all life on Earth. They are part of all of our daily lives. They provide us with food and medicine, purify our water, clean our air, reduce greenhouse gases, and create habitat for people and animals. In this course, students will use magnifying glasses, microscopes, and rulers to examine key plants in the wetlands. Students will learn the life cycle, anatomy, and life histories of

grasses, shrubs, and trees. They will learn the difference between invasive and native plants. Students will also learn why plants are important to all of us and why they need to be protected.

Course 5- It's Buzz Worthy:
A Detailed Look at the Secret Life of Insects




Insects are everywhere in the wetlands. While insects can be defined as organisms with three pairs of legs and three body regions -head, thorax, and abdomen- they all possess unique and interesting life histories. In this course students will explore inside and outside the classroom the life cycle, anatomy, and adaptations of insects found in and around the wetlands at Randall's Island. Using magnifying glasses, butterfly nets, and terrariums students will get an up-close look at insects.

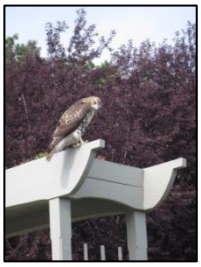
Course 6-Water is what Matters:
A Look at NYC Watersheds and Water Quality



Water connects us all. Water is constantly moving in, around, and through the Earth in various forms. It's found in our oceans, rivers, lakes, and ponds, falling from the sky as rain drops or snow, and flowing out of our faucets in our kitchen sink. People and wildlife all over the planet require clean water to live and thrive. Unfortunately, over the last century, human activities related to different land uses and land management has severely deteriorated water quality. But where does water come from? Where is going? What is a watershed? And are our NYC waterways, including the Harlem River, East River and Long Island Sound, clean and healthy? Through in class and field activities we will answer these and other questions in this course.

Course 7- Feathered Friends:
Birds of the Wetlands & Woodlands



They fly, they dive, they swim, and they sing! Birds are abundant at Randall's Island all year long. Despite being located in one of the largest cities on the planet, Randall's Island is home to variety of waterfowl, songbirds, raptors, and wading birds. Check the wetlands for herons, egrets, and dicks. Look over the stadium for soaring hawks. Search the freshwater wetland in the fall and spring for migratory warblers and sparrows. Learn all about bird anatomy, their adaptations to survival, and their unique life histories. Students will learn how to use binoculars and scopes to view birds in their natural habitat.

NAME: _____ SCHOOL: _____ CLASS: _____

Randall's Island




Wetlands Stewardship Program: Teacher Assessment

1. How did your students benefit from the Wetlands Program? What did they enjoy the most about the program?

_____

_____

_____

_____

_____

2. Were you able to integrate topics learned during the Program into your classroom work? If so, what did you do?

_____

_____

_____

_____

3. How has the program helped to address Common Core standards? How can we improve?

_____

_____

_____

_____

4. How can we improve our Program? We love constructive criticism

_____

_____

_____

_____

THANK YOU FOR TAKING THE SURVEY & VISITING RANDALL'S ISLAND!! Please fax your answers to #212-860-2486.

NAME: _____ TEACHER: _____

Randall's Island
Wetlands Stewardship Program

Pre-Visit Student Survey

1. Draw a picture of a scientist.

NAME: _____ TEACHER: _____

2. I like nature.

a. No!

b. Maybe.

c. I love it!

3. There is nature in New York City.

a. Yes!

b. Maybe.

c. No!

4. When I grow up I want to be a scientist.

a. No!

b. Maybe.

c. Yes!

5. What is a wetland?

_____

_____

6. What animals live in a wetland?

_____

7. I can help protect the environment.

a. No!

b. Maybe.

c. Yes!

NAME: _____ TEACHER: _____

Randall's Island

Wetlands Stewardship Program

Post-Visit Student Survey

1. Draw a picture of a scientist.

NAME: _____ TEACHER: _____

2. I like nature.

a. No.

b. A little bit.

c. I love it!

3. There is nature in New York City.

a. Yes!

b. A little bit.

c. No!

4. When I grow up I want to be a scientist.

a. No!

b. A little bit.

c. Yes!

5. What is a wetland?

_____

_____

_____

6. What animals live in a wetland?

_____

_____

_____

NAME: _____ TEACHER: _____ CLASS: _____

Randall's Island

Wetlands Stewardship Program

Pre-Visit Student Survey

1. What is a WETLAND?

_____

_____

2. What animals live in a wetland?

_____

_____

_____

3. Why are wetlands important?

_____

_____

_____

3. A scientist can:

   a. Look at cells under a microscope.
   b. Identify birds using binoculars.
   c. Measure fish caught in a trap.
   d. All of the above.

2. How do you feel about exploring nature?

   a. I'm not interested.

   b. Maybe.

   c. I love it!

3. Is there wildlife in New York City?

a. Yes.

b. Not sure.

c. No.

4. When I grow up I want to be a scientist.

a. No.

b. Maybe.

c. Yes.

5. There are things I can do to help protect the environment.(circle one answer)

TRUE or FALSE

NAME: _____ TEACHER: _____ CLASS: _____

Randall's Island

Waterfront Stewardship Program

Post-Visit Student Survey

1. What is a WETLAND?

_____

_____

2. What animals live in a wetland?

_____

_____

_____

3. Why are wetlands important?

_____

_____

_____

3. A scientist can:

   a. Look at cells under a microscope.
   b. Identify birds using binoculars.
   c. Measure fish caught in a trap.
   d. All of the above.

2. How do you feel about exploring nature?

   a. I'm not interested.

   b. Maybe.

   c. I love it!

3. Is there wildlife in New York City?

   a. Yes.

   b. Not sure.

c. No.

4. When I grow up I want to be a scientist.

a. No.

b. Maybe.

c. Yes.

5. There are things I can do to help protect the environment.(circle one answer)

TRUE or FALSE

4.

RANDALL'S ISLAND WETLANDS STEWARDSHIP

EXPLORING THE SALT MARSH & FRESHWATER WETLANDS

Acknowledgements

The Randall's Island Wetlands were constructed by the Randall's Island Sports Foundation, the New York City Department of Parks & Recreation Natural Resources Group and the New York City Economic Development Corporation, through generous support from:

The New York City Council
The New York City Department of Environmental Protection
The New York State Department of Environmental Conservation
The New York State Department of State, Division of Coastal Resources
The Office of the Mayor of the City of New York

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The Bay and Paul Foundations
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The Hudson River Improvement Fund of the Hudson River Foundation
Manhattan Community Board 11
New York Cares
The New York Academy of Sciences
The New York City Environmental Fund of the Hudson River Foundation
Patagonia
Rose Family Foundation

This booklet has been made possible through the generous support of Con Edison.

Special thanks to Fernand Brunschwig for many of the wildlife photos in this booklet.

The Randall's Island Sports Foundation (RISF) was formed in 1992 to act as stewards of Randall's Island Park, in partnership with the New York City Department of Parks & Recreation and the local community. Based on the Management, Restoration and Development Plan created in 1999, RISF has worked to transform the Park into an accessible and comprehensive resource for sports and recreation, while preserving the Island's parkland and natural areas.

The first phase of environmental restoration at Randall's Island included a salt marsh and a freshwater wetland, both located near Little Hell Gate Inlet on the west side of the Island.

This booklet will help you learn about the wetlands at Randall's Island, including their environmental benefits, the site history, how the wetlands were created, and what kind of plants and animals inhabit the wetlands. At the end, you will learn how to promote environmental stewardship and become a Randall's Island Wetlands Steward!

For more information, go to www.randallsisland.org.

What are WETLANDS and why are they valuable?

A **Wetland** is an area between land and water where the soil is often saturated with water.

In order to be called a wetland, two other things besides water have to be present: specific kinds of plants and specific kinds of soils that support those plants.

Wetlands are a very valuable resource because they improve water quality, provide habitat for animals, and provide learning opportunities for people!

Water for Freshwater Wetlands comes from rain, stormwater runoff and/or groundwater.

The freshwater wetland at Randall's Island gets water from all three of these sources, but mostly from the water that drains from the roads and sports fields to the south of the site.

Many different types of plants can grow in freshwater wetlands. The freshwater wetland at Randall's Island is an emergent wetland, which means the water is shallow and most of the plants are small and low to the ground. However, as the wetland changes over time, trees may grow and the emergent areas may become a forested wetland, which is sometimes referred to as a swamp.

Freshwater Wetland Site

Freshwater Wetland Vegetation

Salt Marsh is a type of wetland that is found next to salty or brackish water bodies. Salt marshes are among the most productive ecological systems on earth, with very rapid rates of photosynthesis.

Salt marshes are usually tidal, which means that the water comes in and flows out of the wetland twice a day. The tide flows into and out of the Randall's Island salt marsh from the Harlem River, which feeds into the New York Harbor, which in turn is connected to the Atlantic Ocean.

You will not find many types of plants growing in salt marshes because they have to be able to live in the salty water. Most of the plants here are tall marsh grasses. Shrubs and upland grasses were planted on the slopes alongside the marsh to provide different kinds of wildlife habitat.

Salt Marsh Site

Salt Marsh Vegetation

HISTORY & DEVELOPMENT
of Randall's Island

Randall's Island used to be three separate islands: Randall's Island, Wards Island and Sunken Meadow. You can see in the photo that they were separated by Little Hell Gate, a narrow channel that flowed between them.

1700s-1920s

For hundreds of years, the islands were used not as a public park, but as a place for public facilities serving the people of Manhattan. There was a boys' home, a hospital, and a home for civil war veterans.

1930s

In the 1930's, President Franklin Delano Roosevelt opened the Triborough Bridge and the islands were designated as park areas for New York City residents to use for recreation.

SALT MARSH

Prior to 2007
Site before

2007-2008
Clearing site

2007-2008
During site excavation

Wetlands RESTORATION
How did we get there?

As you learned on the previous pages, Randall's Island used to be three separate islands surrounded by rivers and wetlands. The Randall's Island Wetlands that you see today are actually located where the Little Hell Gate Channel and its wetlands used to be before they were filled. That's why they are called restored wetlands.

FRESHWATER WETLAND

Prior to 2007
Site before

2007-2008
Clearing site

2007-2008
Removing garbage and debris

Activity 3: Word Search

The paragraphs below describe how the Randall's Island Wetlands were restored and the kinds of plants and animals you can expect to find in the wetlands now. After reading about the wetlands, see if you can find the bolded words in the word search. The words are hidden diagonally, across and down – nothing is backwards!

Salt Marsh

The **SALT MARSH** was built by excavating the old **FILL** and placing clean **SAND** at lower levels, or **ELEVATIONS**, that would allow the **TIDE** to flow in and out of the site. A tidal **CHANNEL** was also built, which allows the tide to flow into the marsh and provides additional habitat for **FISH** and other wildlife, like **CRABS**. Birds like **EGRETS**, ducks, and **HERON**s will also visit the marsh to **NEST** and search for food. The marsh was then planted with a **GRASS** called **SPARTINA** and the upland areas next to the boardwalk were planted with different kinds of plants, including a flower called New York **ASTER** and a shrub called **BAYBERRY**.

Freshwater Wetlands

Fill was also excavated from the **FRESHWATER** wetlands site, a berm (higher area) was built through the center, and the **SOIL** was shaped so that water would follow a new **FLOW PATH** into and out of the site. The new flow path created more **WETLAND** areas and increased the amount of time the water flows through the wetlands, so that it stays there long enough for the plants and soil to **FILTER** the water and remove pollution. The **PLANTS** at the freshwater wetlands include grasses, rushes, flowering plants like goldenrod, and trees like **WILLOW** and pin **OAK**. The freshwater wetlands provide **HABITATS** for many different types of animals, including insects like **BUTTERFLIES**, dragonflies and **CRICKETS**, as well as **BIRD**s like **ROBINS** and **DUCKS**.

Let's learn about the PLANTS & ANIMALS at the Randall's Island Wetlands

Activity 4: Observation

In order to learn about the plants and animals at the Randall's Island Wetlands, you will need to practice your observation skills. Observe the photo on the next page of a praying mantis, one of the species that lives at the Randall's Island Wetlands.

Activity 4: Species Matching

Match the description of the Randall's Island Wetlands species with these photos taken at the Park by drawing a line to connect the dots.

- **Great Egret** (*Ardea alba*): a large, long-legged and long-necked white heron, seen in tidal areas and salt marshes. It can stand still for a long time, then quickly skewer its fish and crab prey with its long, sharp beak. Great egrets build nests made of a platform of sticks in shrubs or trees near the water.

- **Mallard Duck** (*Anas platyrhynchos*): a common East Coast duck that spends much of the winter in salt marshes. The male mallard has a shiny green head and neck and a white collar. Females have speckled brown feathers. Mallards feed by picking insects from the water surface and plucking bugs and grasses from the bottom.

- **Mummichog** (*Fundulus heteroclitus*): lives in the salt marsh year-round. This finger-length brown fish travels in schools of hundreds of fish. At low tide, mummichogs are confined to the remaining wet areas, but at high tide they rise with the water and look for food among the cordgrass and other plants. During the winter, mummichogs escape the cold by burrowing into the mud.

- **Pickerelweed** (*Pontederia cordata*): an aquatic plant that prefers calm shallow waters and typically grows to be two to four feet tall. It has waxy, dark green leaves that are almost heart shaped. Its long purple-blue flower blooms in summer. Its seeds are eaten by water birds, and fish hide under its large leaves.

Match the description of the Randall's Island Wetlands species with these photos taken at the Park by drawing a line to connect the dots.

Great Blue Heron (*Ardea Herodias*): a lean, blue-grey bird that is the largest and most widespread heron in North America. It has a long "S-shaped" neck and dagger-like bill, which it uses to spear fish out of the tidal creek in the salt marsh. When scared by predators the bird will take flight and produce a distinctive deep, croaking call: *frahnk, frahnk, frahnk.*

Salt Marshmallow (*Hibiscus moscheutos*): a plant found where the marsh meets dry land. Salt marshmallow plants can grow up to four feet tall, and the stems and leaves are covered in hairs. The leaves are toothed. The flowers are pink with a dark center, and can be as big as seven inches.

Strawcolored Flatsedge (*Cyperus strigosus*): a grasslike plant with triangular stems and has very tiny clusters of brown seeds on top. It can grow up to three feet tall. These sedges prefer moist to wet areas and are often found in tidal fresh and brackish marshes, swales, and moist meadows. Sedge seeds provide food for water birds, and geese will also eat the leaves.

Blue Crab (*Callinectes sapidus*): a bottom-dwelling crab which inhabits coastal waters along the Atlantic and Gulf coasts. The back legs of the crab are broad and flat like paddles, allowing it to swim quickly. Blue crabs eat crustaceans, fish, and plants.

How do you become a WETLANDS STEWARD?

Wetland stewardship means taking care of environments like the Randall's Island Wetlands, which are sensitive natural resources. If the wetlands are protected, animals that live there can be healthy, plants can work to filter pollution and help keep our water clean, and we can continue to visit and learn from our environment.

Activity 6: Take notes on your observations at Randall's Island.

PLANTS: What species did you find? .....

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.....

STEWARDSHIP

Activity 7:

Choose one plant or animal you found in Activity 6 and draw it. Pay close attention to the details.

Glossary

Aquatic – growing or living or often found in water

Brackish – describes water that is more salty than fresh water but less salty than sea water; it usually occurs where fresh water and sea water mix

Elevation – the measure of the height or vertical distance of the ground surface

Emergent – a type of freshwater wetland with vegetation growing out of shallow water

Groundwater – water located beneath the ground surface that occupies spaces between soil particles

Habitat – environment or area where plant and animal species live

Hydrology – study of the movement, flow patterns, and quantity of water

Inlet – location where water enters an area

Invasive – non-native; invasive plants or animals often multiply, spread quickly, and push native species out of an ecosystem

Native – describes something that is naturally found in a specific place

Outlet – location where water exits an area

Notes:

Randall's Island

Randall's Island
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www.randallsisland.org

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