Concurrent Speaker Abstracts and Bios

Room A: Forest Restoration Outcomes: Seeing the Forest Through the i-Trees

Long-Term Forest Restoration Outcomes in Pelham Bay Park, Bronx, NY

Novem Auyeung, Natural Areas Conservancy and NYC Urban Field Station

Pelham Bay Park, located in the Northeast Bronx, has had a diverse land use history, although forested areas of the park have had little or no management. A 1986 inventory by NYC Parks' Natural Resources Group found that a large area, a section named Rodman's Neck, was dominated by non-native vines, shrubs and trees. From 1992 to 1995, the site was chemically and mechanically cleared of all non-native vegetation. Native trees and shrubs, including *Quercus* spp, *Acer* spp, *Liquidambar styraciflua*, and *Viburnum dentatum*, were planted. Since the initial restoration, the site has had a variable maintenance regimen, which included areas with no restoration or management (control), and areas that underwent exotic/invasive removal and planting, both with and without subsequent maintenance weeding. The objective of this study is to determine if these restoration efforts resulted in a more native and diverse forest ecosystem and how maintenance affects restoration success. Three distinct treatment areas were delineated using historic restoration plans: Cleared of non-native vegetation, Cleared & Planted with native trees, and Cleared, Planted & Maintained after initial restoration. Control plots were established in adjacent areas that remained degraded.

Forty-eight plots were established using a nested plot design to assess the abundance of non-native plant species, planted tree survival, and native shrub and herbaceous species diversity and abundance. Within each 20 m diameter circular plot, DBH, height, and presence of invasive vines were recorded for every tree. Four shrub/vine plots (5m x 5m) and 4 herbaceous plots (1m x 1m) were arranged at each cardinal direction nested within the circular plot. Stem counts and percent cover, respectively, were used to record the species and abundance. In addition to vegetation data, we also used digital photos to measure canopy transparency to assess progress towards the ultimate restoration goal of a closed canopy forest. A grid camera technique was used to quantify the vertical structure and assess differences in canopy structure complexity among treatments.

Results indicate that total tree basal area is greater across all treatment plots compared to control plots, with the highest basal area found in the Cleared & Planted plots. Native tree basal area was also greater in several treatment plots than in control plots, including those areas treated with invasive removal alone, and those that were cleared, planted, and maintained for invasive control. Foliage height diversity, tree species diversity and canopy closure were all higher in the restored areas compared to control plots. It has been 20 years since the initial restoration work, and the results of this study show retention of planted trees as well as a closed mature canopy forest in the restored areas.

Novem Auyeung is the Ecological Assessment Analyst at the Natural Areas Conservancy and a Research Assistant at the NYC Urban Field Station. She works on a variety of urban ecology projects related to forest restoration, ecological assessments of upland ecosystems, and urban soil health. She holds a Ph.D. in Forestry and Natural Resources from Purdue University, and her dissertation was on climate change effects on soil nutrients and microbial communities. She received her B.S. in Environmental

Science from Brown University, where she conducted her senior thesis research on stress responses in invasive plants. Broadly, her research interests are focused on the impacts of global environmental changes (i.e., climate change, species invasions, habitat fragmentation) on ecosystem functioning and species composition/diversity.

Million Trees NYC: Reforestation Survival Study

Brady L. Simmons: NYC Urban Field Station and NYC Parks and Recreation

The Natural Resources Group has led a reforestation effort throughout New York City with the goal of creating 2,000 new forested acres (MillionTreesNYC). A survivorship study was developed as one tool to evaluate the success of the program. The summer of 2012 marked the fifth and final year of data collection in 53 parks citywide. The trees (3-4 gallon container stock) planted from fall 2007 until spring 2012 were sampled to assess the survival and health during the critical root establishment period, or the first 2 years after planting.

Across the city, permanent plots (25m^2) were established within planting area boundaries that were determined using a GPS unit. Based on recommendations from Emmerich et al (1999), 3% of the planting areas (or 468 plots) were sampled. Plots were randomly selected for each planting area using ArcGIS version 9.3 and Hawth Tools version 3.27. Basic data were taken for each tree: species, alive/dead status, diameter and height. Three variables for cause of death were used to capture herbivory and vandalism. The health of the live trees involved a number of variables. Insect and mammal herbivory and leaf discoloration were used to gauge damage to the tree. Dieback, or death of the main stem, was also measured by two categories of "less than" or "more than" half dead. A vine class was assigned for each tree sampled.

Soil samples were also collected from a subset of plots within the monitoring project. Multiple surface soil samples (0 – 10cm) were collected within the 25 m^2 plot, and a composite was submitted to a soils lab at Brooklyn College. Samples were tested for texture, organic content, pH, bulk density, and plant available nutrients. Soil pH was measured *in situ* at the time of collection.

An initial analysis of citywide data revealed that newly planted trees exhibited a survival rate of 88% in their first year. Once the trees made it through the first year, there was a 90% chance of survival through the second year. Trees planted in afforestation plantings, where there is little or no mature canopy cover, had a lower survival rate in the first year of establishment (86%) than those planted as part of reforestation efforts (90%). The rates of dieback were similar between the first and second year of growth (73% and 69%, respectively). Preliminary soils analysis shows a positive relationship between increased organic matter in the planting sites and growth of the leader stem between year one and two. Additional analysis will link survival and health metrics of the trees with site prep and maintenance regimes to assess the effectiveness of various restoration practices in both reforestation and afforestation efforts.

Emmerich, T., ed. (1999). Forest Conservation and Restoration in the City. A Report of the Urban Forest and Education Program. City Parks Foundation. 83p.

This study was designed and led by **Brady Simmons**, an ecologist at Parks' Natural Resources Group (NRG). Ms. Simmons has been a research ecologist at NYC Parks and Recreation since 2009 and is stationed at the NYC Urban Field Station, located in Bayside, NY. Most of her work has focused on studying the forest restorations of NRG, past and present. Ms. Simmons received her M.S. in Ecology from Southern Connecticut State University, and has been working in wildlife research and management since 1997, specifically developing monitoring protocols for endangered species of birds and reptiles in NC and CT. To find out more about the study, email at Brady.Simmons@parks.nyc.gov or call (718) 225-3061 ext. 309.

Using i-Tree to Quantify the Benefits of Ecological Restoration

Jason Henning: The Davey Institute and USDA Forest Service, Northern Research Station - Philadelphia Field Station

Among practitioners and supporters of ecological restoration, the intrinsic value of restored ecosystems is not in question. However, the costs and impacts of restoration work often extend beyond the "restoration world". When trying to raise awareness of the value of ecological restoration, it can help to be able to directly assess the environmental and economic benefits of a restored ecosystem. The i-Tree Suite of software tools, available for free from the USDA Forest Service, was designed to quantify the benefits, ecosystem services, and value of trees. The i-Tree tools have been used to great effect to increase funding and support for urban forestry, as well as for planning purposes. This software has the potential to be applied to restoration projects where it can be used to quantify benefits such as stormwater run-off reduction, air pollution mitigation, carbon sequestration, public health benefits, and the economic value provided by woody vegetation. The i-Tree tools can be used to predict what the outcomes of ecological restoration could be and to create some measures of how well ecological restoration projects work. This talk will focus on specific examples of applications of the i-Tree software in quantifying some of the benefits of restoration projects. The limitations of the software and adaptations specific to restoration work will also be discussed. This talk will follow up on my popular presentation from last year's SER-MA conference, with guidance crafted in response to feedback from ecological restoration practitioners as well as an overview of new i-Tree tools and features.

Jason Henning is a research urban forester with the US Forest Service and The Davey Institute. He has a PhD in Forestry and an MS in Statistics from Virginia Tech. His current work focuses on applied science and communication of scientific topics to support the informed management of urban forests. He has been the project manager for multiple i-Tree related urban forest inventories and has helped with project planning and training involving i-Tree throughout the mid-Atlantic region. He is also responsible for support and outreach involving the i-Tree Suite of tools. The i-Tree tools were developed by the US Forest Service and The Davey Institute to facilitate assessment of urban forest ecosystem services across a diversity of scales and user groups.

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Riparian Buffer Survival Guide: After the Green Rush

Joseph Mihok, Bucks County Chapter of Trout Unlimited
Gregory Glitzer, Bucks County Chapter of Trout Unlimited

Riparian buffers represent a key component in many watershed restoration plans, and riparian buffer planting projects are promoted as a simple way for the community to engage in hands-on conservation work. But what makes a successful riparian buffer project? While the ecological benefits of riparian buffers are well documented, the critical factors contributing to a successful riparian buffer planting project are not always considered. Since 2006, the Bucks County Chapter of Trout Unlimited (BCTU) has completed riparian buffer projects throughout the coldwater watersheds of Bucks County, and Chapter members have participated in additional buffer planting projects sponsored by various watershed associations. BCTU has gained a significant experience set with these buffer projects, and we have learned from every one of them. However, we often learn the most from our failures. BCTU Conservation Chair Joe Mihok and Conservation Committee member Greg Glitzer will share the Chapter's riparian buffer experiences and outline the critical and often overlooked components of a successful riparian buffer planting project. From planning, design, and procurement, to assessing and protecting plantings against any number of threats, to developing a common-sense maintenance program, see what has worked and what has failed in a variety of riparian corridor settings.

Joseph Mihok, M.S. has been the Conservation Chairman of Bucks County Trout Unlimited for 12 years. He directs the chapter's stream restoration and riparian buffer projects, water quality monitoring programs and stream protection advocacy efforts. Mr. Mihok received his Bachelor of Science degree in Biology from Penn State. He graduated from the University of Pennsylvania's Masters of Environmental Studies Program in May, 2013.

Gregory Glitzer, P.E. is a member of Bucks County Trout Unlimited Conservation Committee and a fly fisherman with a passion for everything in the trout's world, from macroinvertebrates to geomorphology. Mr. Glitzer is also a professional engineer with a Bachelor of Science degree in Civil Engineering from Penn State and over 28 years' experience that provide a unique perspective in his leadership of the green infrastructure practice at Gilmore & Associates, Inc.

Room B: Expanding the Vision: Restoration in Different Forms

Community, Water, and Landscape Improvement: Green Infrastructure Applications in Philadelphia
Kevin Selger, Gilmore & Associates and Adjunct Prof. of Landscape Architecture, Temple University

Green City, Clean Waters and Green 2015 are part of the City of Philadelphia's overall plan to address wet weather pollution control from combined sewer overflows and stormwater as well as increase the amount of accessible green and open space within the city itself. As part of these initiatives, public facilities, namely schools, recreation centers, playgrounds, and parks, are being targeted for implementation of green infrastructure and conversion of impervious surfaces to landscape and green space.

This presentation will focus on the implementation of green infrastructure and sustainable landscape strategies for two projects within the City of Philadelphia. One project involves a new high school and the other a park renovation and expansion. Details, implementation, and construction methods of both projects will be discussed including the challenges of development and ongoing maintenance in an urban environment.

The first project is the conversion of a brownfield site into a new performing arts high school (Kensington Creative and Performing Arts High School, CAPA) with many green infrastructure and sustainable development strategies. These include rain gardens with native plantings, green roofs, rainwater cisterns for a building grey-water system, underground stormwater detention facilities, porous pavements, material recycling/reuse, and a geo-thermal well field. This was the first high school in Pennsylvania to achieve LEED® Platinum status and was selected by the American Institute of Architects as one of the 2012 Top Ten Green Projects. Kensington CAPA was recently featured on educational tours for GreenBuild 2013.

The second project is renovation and expansion of Panati Park, a neighborhood park and playground in a post-industrial/developed section of Philadelphia, which is almost completely devoid of trees and green space. It is a partnership between the City of Philadelphia's Department of Public Property, Capital Projects Division and the Philadelphia Water Department. The goals were to renovate and expand the park, but also to incorporate green infrastructure strategies into the design to address stormwater impacts from the park and surrounding neighborhood streets. The existing site is almost completely paved and has little landscape area. The project includes "depaving" portions of the site and incorporating pervious surfaces to increase runoff infiltration including rain gardens, native plantings, trees, lawn areas, and pervious rubber playground surfacing. The stormwater and green infrastructure methods include rain gardens and an underground stormwater infiltration and detention bed. The green infrastructure measures collect not only runoff from the park itself, but also from the surrounding neighborhood streets. The existing recreation center roof water is also diverted into the stormwater system. These actions decrease the flows of urban runoff into the combined sewer system. These strategies provide an opportunity to address stormwater pollution and combined sewer overflow concerns as well as add green space and landscape plantings into a highly urbanized and paved environment.

Kevin Selger brings over 16 years' of experience providing site design/planning, landscape architecture, stormwater, green infrastructure, and sustainable/green/LEED® design services. His work includes projects in the Delaware Valley region, across the United States, and overseas. He provides leadership in sustainable site design and coordinates the design and documentation of LEED® Certification credits.

Mr. Selger also has written articles on security design and sustainable design/stormwater management which have been published in professional magazines, and he has been a speaker at regional and national conferences. Mr. Selger is an adjunct professor at Temple University's School of Environmental Design, Department of Landscape Architecture & Horticulture and teaches courses in site design, site engineering, stormwater, and green infrastructure design.

Mr. Selger holds the following degrees and professional certifications/licenses:

- Master of Landscape Architecture – North Carolina State University – Raleigh, NC
- Bachelor of Science in Landscape Architecture – Temple University – Philadelphia/Ambler, PA
- Registered/Licensed Landscape Architect – Pennsylvania & Delaware
- LEED® Accredited Professional – United States Green Building Council.

Local Law 11 of the City of New York: Increasing Biodiversity Through the Use of Native Plant Species
Heather Liljengren, Greenbelt Native Plant Center

On May 1, 2014 a local law will require that all plantings within New York City Parks property conform to a native species planting guide developed by the New York City Parks Department. The guide will maximize the use of native plantings and drought- and salt-tolerant plantings, as appropriate, and minimize the presence of exotic monocultures on all city-owned property. The creation of this guide brought together the Natural Resources Group, Horticulture and the Capital Projects division to determine the native species suitable for planting in the city of New York. The guide will be accessible for use by property owners and professional land managers and is encouraged to be used in all public landscapes.

Defining what is native and highlighting common native species that naturally occur within the five boroughs was the framework used for the planting guide. Challenging the current common trends in urban design and focusing on ecological community composition for a plant palette required a scientific approach that was not without its hurdles. The Greenbelt Native Plant Center (GNPC), a municipally owned nursery of the City, used the data and knowledge of its field staff, collected throughout the natural areas of the metropolitan region, to inform this guide. The unique natural habitats and built landscapes that exist within the five boroughs are home to over 700 native plant species. The mission of GNPC has long guided ecological restoration in one of the most highly urbanized landscapes in the country, using these common native plant species. The long-term sustainability of the most valuable natural areas in the City depends on the appropriate plant material selected for use. The use of native plants, locally sourced and grown, has been promoted by GNPC for over 25 years. Using the right native plant for the right urban place is the only way to improve sustainability and ecosystem services. GNPC has offered guidance on the design of sustainable landscapes to professional designers and restorationists, as well as community gardens and research projects. The native species planting guide will reflect this guidance and promote the spirit of the law: native plants are the building blocks of our biological diversity and the cornerstone of our natural ecosystems.

Heather Liljengren, is co-author of the Native Species Planting Guide for New York City, 2nd Edition, and is the Supervising Seed Collector and Field Taxonomist for New York City's Greenbelt Native Plant Center. She actively manages the collecting, processing and storage of seeds that are used to produce plants to restore critical habitats in disturbed ecosystems in New York City's public landscapes. For 6 years, Heather has traveled within a 100-mile radius of the City hunting for natural native plant populations to harvest seed from, while following the international collection protocol. She previously served as an intern at the Brooklyn Botanic Gardens and the National Tropical Botanical Gardens. She holds a BS degree from the University of Massachusetts at Amherst in Environmental Design.

Non-Target Impacts on Biodiversity of Ecological Restoration Projects
Erik Kiviat, Hudsonia

Management projects that restore, create, enhance, or mitigate are intended to improve biodiversity support or other ecosystem services. Because any change to a habitat will favor some species and disfavor others, these projects may have negative as well as positive consequences to desirable species. Several examples are from projects in New York's Hudson Valley and northeastern New Jersey. Hudsonia designed, monitored construction of, and conducted research on wetland and upland habitats created for the State-Threatened Blanding's turtle in 1996-1997 at a site in Dutchess County, New York. Earthmoving and tree removal associated with habitat construction destroyed a winter den occupied by northern water snake, eastern garter snake, and milk snake. A small ditch to provide water flow into constructed wetlands allowed fish to swim upstream into a previously fish-less intermittent shrub swamp used by woodland pool-breeding amphibians. A wetland restoration project at Lincoln Park, Jersey City, New Jersey, ca. 2011 resulted in the removal of a stand of eastern cottonwood where a rare lichen had been found not long before. In 2010, a mitigation bank was installed at the Kane Natural Area in Carlstadt and South Hackensack, New Jersey. This resulted in the destruction of approximately 40 rain pools on a 1-km pipeline service road that supported a large population of an unlisted but globally rare clam shrimp. The mitigation bank also used the habitat of a rare native flatsedge for parking equipment, and apparently caused the spread of at least one potentially invasive non-native flatsedge. Certain elements of these examples resulted from circumstances that would have been difficult to foresee, whereas other elements were understood in advance of construction. Because adverse factors such as climate change, land development, and pollution also cause stress to desirable species, and management is increasingly practiced on a large scale, practitioners should consider cumulative impacts to species of conservation concern. Many instances of negative non-target impacts could be avoided by reviewing extant data on rare species, performing pre-design surveys of a wide range of taxa of concern, and placing higher value on the rare native species that already exist on a prospective restoration site.

Erik Kiviat, PhD, is Co-founder and Executive Director, Hudsonia Ltd. Formerly Professor of Environmental Studies, Graduate School of Environmental Studies, Bard College. Forty-five years of experience with natural history and environmental issues in the Northeast, and elsewhere in North America. Co-author of *Biodiversity Assessment Handbook for New York City* (2013), and *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* (2001); author of *The Northern Shawangunk Mountains: An Ecological Survey* (1988). Technical and popular publications on wetland ecology, conservation science, rare species, invasive plants, Hudson Valley natural history, human ecology, renewable energy. Research on the habitats and populations of rare and common turtle species, and landscape-level management of animals with large area requirements. Studies of biota, communities, and ecosystems in tidal wetlands and other habitats of the Hudson River and other northeastern estuaries. Fourteen years of research on biodiversity and its management in the urban landscape of the

New Jersey Meadowlands. Research on ecology and management of invasive plants, especially long-present species such as common reed, purple loosestrife, Japanese knotweed, and water-chestnut, that have both positive and negative impacts on native biodiversity and ecosystem services. Extensive involvement with policy-makers, land use planners, and environmental managers.

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A Call for Sustainable Methods and Practices in Stream Restoration

Scott McGill, Ecotone, Inc.

Stream restoration in the early 1990's promoted the use of native materials in natural channel design to achieve efficiency and cost savings. Since that time, specifications have moved away from the use of native materials more to practices which require materials which are not readily available locally, such as sandstone boulders, or square-sided boulders for imbricated riprap. In addition to the use of exotic materials, projects often require extensive haul-off of excess material due to unbalanced cut and fill. These practices can increase the project's overall construction costs substantially, and because extensive haul-in and haul-off is required, increase damage to local roadways. By incorporating sustainability principles into the three stages of a project's development – site analysis, design, and construction/long-term site integrity – the project sponsor and designer achieve greater efficiency in design, reduce the project's carbon emissions as a result of construction, and promote local economic development and community involvement. At the site analysis stage, the project's on-site resources, spoil areas, and local sources of material are identified and incorporated into the overall project concept. During the concept design stage, a sustainability review is conducted where cost-prohibitive components are identified and alternatives are explored. As an example, by expanding the LOD in a project to incorporate a spoil area for excess material, haul-off of excess materials is substantially reduced or eliminated altogether. During the construction phase, the designer should promote collaboration with the contractor to facilitate efficiencies which are sometimes revealed during the construction process. Two stream restoration case studies of constructed projects in the Central Maryland region will be presented to illustrate how the use of sustainable practices and methods can improve the integrity of restoration projects and promote efficiencies in a project's implementation, all while reducing energy expenditures and reducing costs. Tools, methods, and specification templates for integrating sustainable practices into stream restoration design will be presented. An estimate of each project's fossil emissions will be presented and discussed.

Scott McGill is a Founder and Principal at Ecotone, Inc. a design-build river and wetland restoration company based in Forest Hill, MD. Mr. McGill has over 23 years of applied experience in both design and construction of stream and wetland restoration projects throughout the East Coast of the U.S. Originally founded as a restoration design firm, in 2003 Ecotone expanded its operation to include restoration construction and planting services, and now specializes in design/build (DB) projects and collaborates with numerous ecological and engineering companies on DB projects. His firm has designed and/or constructed over 14 miles of stream restoration work and 700 acres of wetlands in the Mid-Atlantic and Southeastern regions of the U.S.

Room C: Case Studies of Unique Restoration Projects

Maritime Forest Creation and Restoration in Bradley Beach, NJ: A Case Study

Captain Alek Modjeski, Habitat Restoration Director for the American Littoral Society, Christopher Benosky, PE, CFM, AECOM National Director of Ecosystem Restoration Services*
And Chris Syrett, RLA AECOM, Landscape Architect

A comprehensive effort to restore coastal lakes and beaches is required for the continued sustainability and improved resiliency of New Jersey shore communities and their coastal lake environs. The Bradley Beach Maritime Forest Creation-Restoration Project was implemented as a small-scale case study to serve as model for future, more comprehensive, restoration efforts. The restoration of the site was achieved through removal of pavement and debris, the creation of graded sand dunes and ridges, and intensive planting with native coastal trees, shrubs, and herbaceous plant species. The planting and elevated grades created a back-dune ecosystem that enhances the ecology of the site and improves the resiliency of the shoreline and demonstrates how community consensus can be grown and funding allocated. In the current economic environment and with sometimes limited funding, this restoration effort highlights alternative paths for completing important restoration efforts.

Captain Alex Modjeski (* Presenter) is a Professional Ecologist, Fisheries Biologist, and the Habitat Restoration Director for the American Littoral Society (ALS) in Highlands, New Jersey. He has over 17 years of experience in project management, coastal restoration, gran writing and permitting for the design and construction of herpetological, avian, fish, benthic, wetland, sediment, water quality, and mammalian surveys. Prior to his current appointment he was a Senior Project Manager, Water Natural Resources Director, and Senior Ecologist for a private environmental consulting firm. Captain Modjeski is a Licensed USCG Operator of Uninspected Passenger Vessels, the Project Manager for the Phase 1 Maritime Forest Creation Project in Bradley Beach. In this capacity, he was able to secure grant funding and recruit over 130 volunteers and create partnerships integral to Phase 2 of the Bradley Beach Maritime Forest Project.

Christopher Benosky, Principal, AECOM and the firm's National Director of Environmental and Ecological Planning and Design Services, has over 25 years of experience in coastal engineering, hydrodynamic modelling, estuary design, risk management, hydrologic and hydraulic analyses, stormwater systems design, dam engineering and geotechnical engineering. In his role, Christopher develops the firm's coastal, water, and environmental practices and innovative design approaches. He is responsible for the planning and design of more than 10,000 acres of coastal wetlands throughout North America and abroad. He is a Licensed Professional Engineer in eight states and a nationally Certified Floodplain Manager. Chris received his BS in Civil Engineering from the Ohio State University in 1991 and MS in Civil Engineering from the Ohio State University in 1992.

Chris Syrett is a Registered Landscape Architect in New York State with over 14 years of experience working on a wide variety of ecological restoration projects and landscape designs throughout the Northeast. His experience includes stream and wetland restoration, green infrastructure and BMP installation, park and streetscape designs, and forest management plans. Chris is a Certified Arborist (ISA) and Certified Professional in Erosion and Sediment Control (CPESC). Prior to his employment with AECOM, he worked at several design firms and as a Forester and Natural Areas Manager for New York City Parks and Recreation. chris.syrett@aecom.com

Restoration of Lizardhill Sandmine Using Sand Seepage Wetlands
Joe Berg, Ecological Restoration Practice Lead, Biohabitats, Inc.

This project site is located in one of the worst nutrient-contaminated drainages in the coastal bays of Maryland and Delaware. Here, a 30-acre exhausted sandmine was "restored" to a stream flowing through an upland-wetland of sand seepage forested wetlands, shallow open water wetlands, and forested uplands. The intention was to provide water quality treatment to approximately 400-acres of ditched agricultural fields normally used to "waste" chicken manure from broiler houses. The treatment approach uses water stage differences to support hyporheic flow through a 3-ft thick layer of coarse sand combined with a carbon source to drive denitrification and other microbially mediated water quality improvement processes. In addition to the water quality benefits, this design approach has demonstrated significant stormflow peak attenuation, reduced water temperature, and increased duration of flow.

Joseph Berg, Ecological Restoration Practice Lead for Biohabitats, Inc., is an Ecosystems Ecologist with more than 30 years' experience in the assessment, analysis, preparation and implementation of restoration plans; studies, and permitting natural resource work. His work focus on the restoration of integrated stream, wetland, and floodplain functions as a means to deliver ecosystem services. Joe challenges the restoration community on improving restoration by recognizing and understanding that we are all working in novel ecosystems where "normal" and "reference" paradigms need to be considered in the context of the resources anthropogenic history. Joe graduated with an M.S. in Marine, Estuarine, and Environmental Science from the University of Maryland in 1984 after two years working on Chesapeake Bay issues as a Research Fellow. He received a BS in Interdisciplinary Environmental Science from the California University of Pennsylvania in 1981.

Wetland Restoration in the Urban Corridor Case Study: Lincoln Park West, Jersey City NJ
Carl Alderson, NOAA Restoration Center, JJ Howard Marine Science Lab, Sandy Hook, NJ

The Lincoln Park Wetland Restoration Project, located in Jersey City, unites and synchronizes landfill closure, site remediation, and beneficial re-use of federal navigational dredge material, public health and safety, wetland and habitat restoration. It is regional recreation destination for bikers, hikers and paddlers, migratory fish passage. In 1999 a Feasibility Study was undertaken by the U.S. Army Corps of Engineers. The comprehensive study took 6 years with many agencies working together to complete the study. With funding from the American Recovery and Reinvestment Act (ARRA), Lincoln Park won the nation's largest award for habitat restoration of NOAA's ARRA funds. This presentation discusses funding issues and showcases the Lincoln Park West's 42 acres of new wildlife habitat, (tidal low marsh, open water/mud flat, tidal high marsh, and scrub shrub community), and details how the existing lake was connected to the tidally flowed waterways by a two-way weir.

Carl Alderson is a Marine Resource Specialist with the NOAA Restoration Center, located in Highlands, N.J. He provides oversight of coastal habitat restoration projects and marine debris programs through NOAA's Damage Assessment, Remediation, and Restoration Program and Community-based Restoration Grants Program in the Mid-Atlantic region. Carl graduated from Rutgers University and is a Licensed Landscape Architect. Before joining NOAA, he worked for the City of New York and led a decade-long effort to restore tidal wetlands, marine habitat as compensation for natural resources damages resulting

from oil spills in New York Harbor. He is recognized as a national leader in restoration of coastal wetlands and bay habitats.
Carl.Alderson@noaa.gov

Ecological Response of Historically Ditched Salt Marsh in Delaware's Inland Bays to Hydrologic Restoration and Habitat Enhancement, *Chris Pfeifer, Senior Consultant, Cardno ENTRIX*

In 2009, a project to restore and enhance a 24-acre tract of historically ditched salt marsh along Slough's Gut, a tributary to Indian River Bay in southern Delaware began. The project, located within the James Farm Ecological Preserve near Ocean View, Delaware, involved replacing parallel grid-ditches dug in the 1930's with a network of meandering tidal creeks interspersed among several types of created salt marsh micro-habitats. Spoil from excavation was used to backfill mosquito ditches. Project objectives focused on increasing micro-habitat diversity, expanding foraging opportunities for marsh-dependent species and restoring more natural hydrologic patterns to the site. A unique aspect of this project was the scope and intensity of monitoring, which extended beyond that of most typical regulatory driven restoration projects.

Chris Pfeifer, Senior Consultant, Cardno ENTRIX, is an accomplished Wetland Scientist with over 20 years of experience in the areas of saltmarsh and coastal wetland ecology with a focus on habitat restoration, creation, and enhancement. He has applied his expertise in wetland science and restoration ecology to satisfy compensation and mitigation requirements to a wide variety of wetland, riparian, upland, and aquatic habitat types. The majority of his habitat restoration experience is in the context of natural resource damage assessments developing and implementing restoration-based settlements to address environmental liabilities associated with oil spills and contaminated sites. Chris holds undergraduate and graduate degrees in Physical Geography and Environmental Science and Engineering from the University of Delaware and the University of North Carolina-Chapel Hill, respectively.
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