

Habitat and Ecological Health

GOALS, OBJECTIVES, *and* PRIORITY ACTIONS



RESTORATION WORK GROUP

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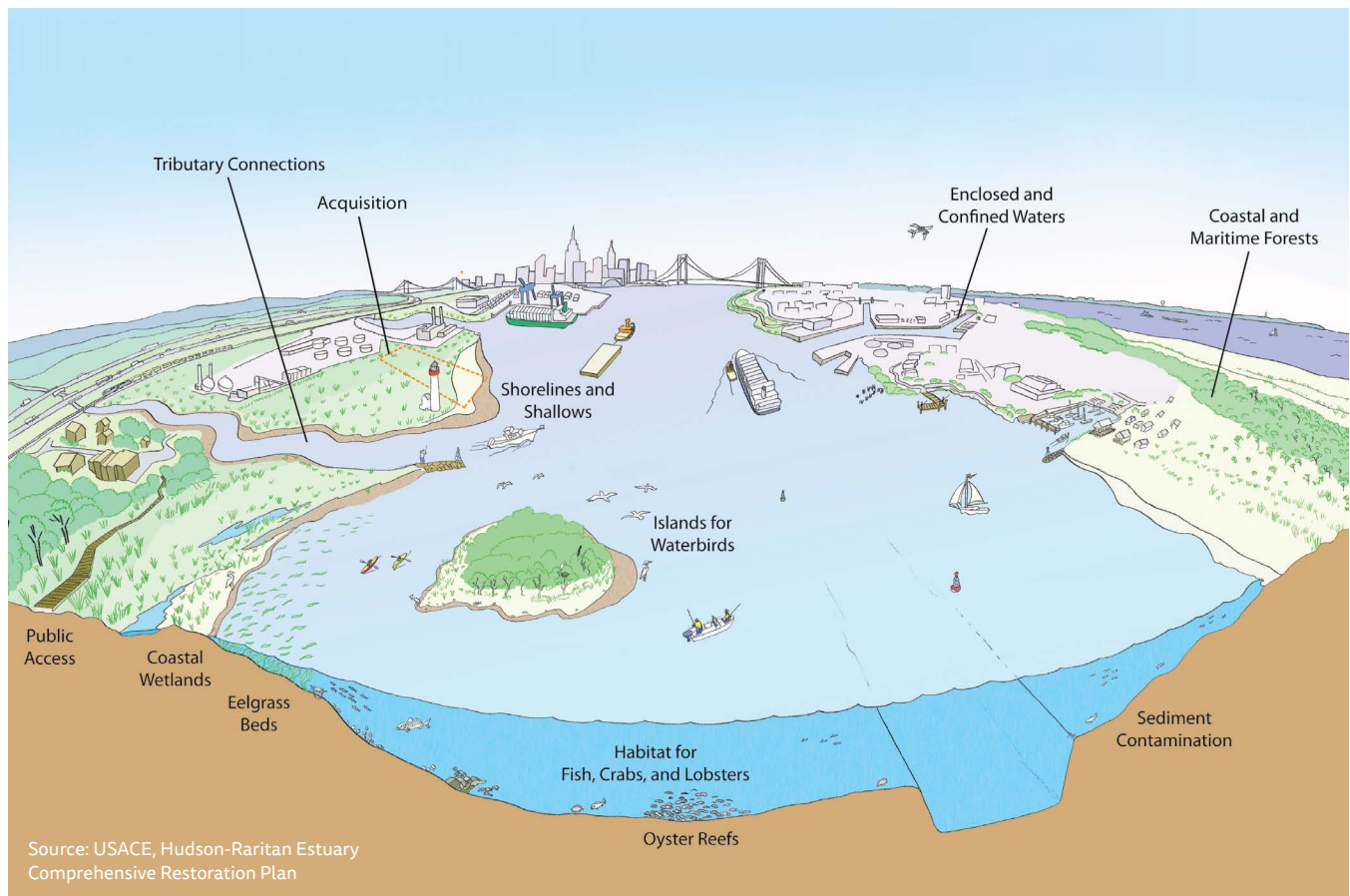
Oyster Catchers. Photo: Don Riepe

Protect and restore the vital habitat, ecological function, and biodiversity that provide society with renewed and increased benefits.

The Harbor Estuary is an incredibly vital and important landscape. While the natural resources remaining today do not compare with the rich habitats our estuary supported before European colonization, the open waters, tributaries, and wetlands continue to support important population of fish, migratory birds, and other species. Through the creation of the Hudson-Raritan Estuary Comprehensive Restoration Plan, HEP and its partners have set goals for the conservation and restoration of 12 Target Ecosystem Characteristics (TECs) including wetlands, habitat for waterbirds, oysters, tributary connections, and maritime forest. These goals provide a path towards a healthy urban ecosystem.

Over the next five years, HEP will undertake 13 actions that will help implement the Comprehensive Restoration Plan. These include actions intended to reduce the costs and secure required funding for the individual restoration projects. HEP will also continue to support the community of practice for urban restoration, notably seeking to address challenging issues related to the recontamination of restoration sites, understanding the value of urban shallows and shorelines, documenting the value of ecosystem services, supporting the sharing of monitoring results, and advancing the understanding of how impending sea level rise and other climate change impacts will affect restoration work.

THE 12 TARGET ECOSYSTEM CHARACTERISTICS OF THE HUDSON-RARITAN ESTUARY



The Harbor Estuary is an ecologically significant resource, despite its location at the heart of the North America's largest metropolitan area. More than 250 square miles of open water and countless tidal tributaries are home to more than 200 fish species for some or all of their lifecycles, including 16 for which the Estuary provides essential habitat. Lining the 1,600 miles of shoreline are shallow mudflats and about 7,600 acres of wetlands that shelter shellfish, fiddler crabs, juvenile fish, and resident and migratory birds. There are 68 small islands critical to nesting shorebirds and hundreds of acres of rare coastal and maritime forests and grasslands.

Managing these existing resources, and restoring the ecological characteristics of the historic estuary, involves many challenges. There is intense pressure to develop and fragment much of the remaining unprotected habitat area for transportation, commercial, residential and recreational uses, and other purposes. Even for areas protected as public parkland, toxic contamination of soil and sediments, historical and illegal filling of wetlands, interference with natural hydrological functions, and overuse can stress and degrade habitat in the Harbor. The impacts of climate change will pose new challenges associated with increasing air and water temperatures, rising sea levels, and larger coastal storms.

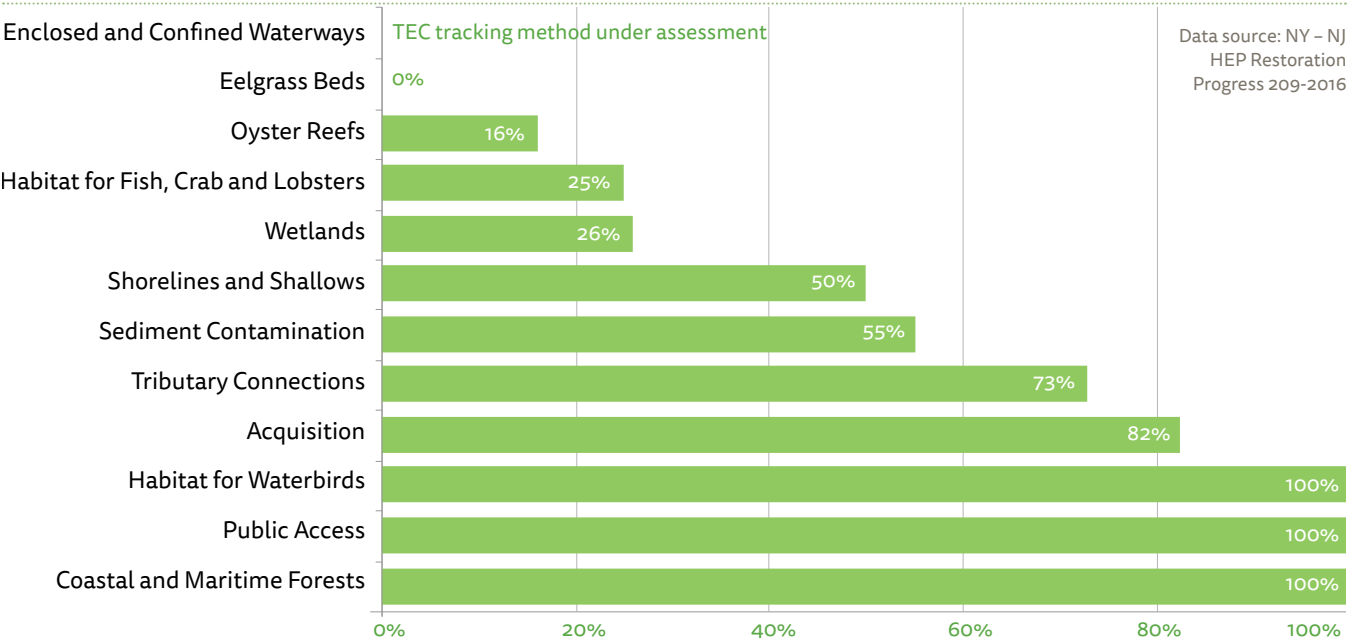
Published in 2016, Version 1.0 of the Hudson-Raritan Estuary Comprehensive Restoration Plan (HRE CRP) provides a blueprint for guiding ecosystem restoration and conservation efforts. This science-based plan was developed by the US Army Corps of Engineers and the Port Authority of New York & New Jersey, and

involved many partners, notably HEP's Restoration Work Group (RWG). The plan, available at www.harborestuary.org/watersweshare provides goals for each of 12 TECs for the years 2020 and 2050.

Progress towards these goals since the 2009 publication of the initial draft plan has been varied. Some 2020 goals have already been met or exceeded, including targets for habitat for waterbirds, coastal and maritime forests, and improving tributary connections critical to migratory fish. However, progress toward other goals such as restoring wetlands, oyster reefs, shorelines and shallows, and eelgrass beds, has proved more challenging. Achieving these and other Comprehensive Restoration Plan goals will require substantial funding and leveraging efforts, above existing amounts. Advancements in our understanding and development of additional data on shorelines and shallow water habitat, sediment management, and the ecological value and efficacy of "nature based" resiliency features are critical to reaching these goals successfully.

HEP is also working with New York State's Hudson River Estuary Program and Partners Restoring the Hudson to help ensure coordinated progress towards the Targets identified in the Hudson River Estuary Action Agenda as well as the TECs identified in the Hudson River Comprehensive Restoration Plan that covers the River and watershed north of the Tappan Zee Bridge. This plan has identified 12 TECs including shallow water habitat, shorelines and riparian areas, and tributary barriers and connectivity.

Target Ecosystem Characteristics Towards 2020 Restoration Goals



PASSAIC

HABITAT AND ECOLOGICAL HEALTH CONTEXT

● Habitat Restoration Sites
Identified in HRE-CRP
Feasibility Study

Wetlands

Waterfront Parks

MORRIS

WESTCHESTER

BERGEN

BRONX

ESSEX

NEW
YORK

HUDSON

QUEENS

NASSAU

UNION

KINGS

RICHMOND

SOMERSET

MIDDLESEX

MONMOUTH

0 5 miles

Data sources: Restoration Sites: USACE, Hudson River Estuary CRP Feasibility Study. Wetlands: U.S. Fish and Wildlife Service NWI, Bathymetry: NJ: USGS CoNED Topobathy DEM, NJ & DE, USGS; LI: NOAA NCEI Topobathy DEM Hurricane Sandy Area, NOAA; Ocean: USGS Geologic Framework Data, Long Island Sound.



Habitat and Ecological Health



*Protect and restore vital habitat, ecological function, and biodiversity
that provide society with renewed and increased benefits.*

OBJECTIVE A *Make progress towards restoring the Estuary's target ecosystem characteristics*

H-A-1 INVESTMENT

Increase investment in conservation and restoration projects.

H-A-2 COST REDUCTION

Evaluate ways to reduce costs of restoration.

H-A-3 ECOSYSTEM SERVICES

Document value of ecosystem services delivered through restoration for decision makers.

H-A-4 PRIORITIZATION

Create a decision making tool for prioritization of restoration opportunities.

OBJECTIVE B *Improve the quality and likely success of habitat restoration*

H-B-1 RESTORATION BEST PRACTICES

Share research and best practices among partners.

H-B-2 SHORELINE ASSESSMENT

Assess and interpret shoreline and shallow-water habitat condition and value.

H-B-3 RECONTAMINATION

Understand the risks of recontamination of restored sites.

OBJECTIVE C *Support habitat and restoration monitoring and the utility of monitoring data*

H-C-1 HABITAT MONITORING

Increase support for monitoring and consistency among metrics.

H-C-2 DATA SYNTHESIS

Synthesize existing monitoring data to better understand and communicate trends.

OBJECTIVE D *Advance understanding and incorporation of climate change impacts in habitat management and restoration*

H-D-1 SEA LEVEL RISE

Ensure incorporation of sea level rise into restoration and management practices.

H-D-2 BUYOUT RESTORATION

Advance conservation and restoration planning for properties eligible or already acquired through flood plain/ buyout programs.

CHALLENGES	INDICATOR
<ul style="list-style-type: none"> ● NOT ENOUGH HABITAT <ul style="list-style-type: none"> Objective A Objective D 	<ul style="list-style-type: none"> NOT ENOUGH HABITAT <ul style="list-style-type: none"> Established Oyster Beds Area of Coastal Forest and Grassland Area of Wetlands Percent and Distribution of Natural Shorelines Tributary Habitat Connectivity
<ul style="list-style-type: none"> ● HABITAT IS DEGRADED <ul style="list-style-type: none"> Objective B Objective C Objective D 	<ul style="list-style-type: none"> HABITAT IS DEGRADED <ul style="list-style-type: none"> Benthic Index of Biotic Integrity Estuarine and Diadromous Fish Abundance Whale and Dolphin Abundance Riparian Area Integrity Stream Health Bioassessment Horseshoe Crab Abundance Submerged Aquatic Vegetation Nesting Pairs of Harbor Herons Acreage of Habitat Exposed to Low DO Upland Quality/Functionality



HABITAT AND ECOLOGICAL HEALTH

OBJECTIVE A

Make progress towards restoring the Estuary's target ecosystem characteristics

H-A-1

INVESTMENT

Increase investment in conservation and restoration projects.

NEED

There is limited funding for restoration efforts in the NY – NJ Harbor Estuary.

DESCRIPTION

HEP will work with the members of the Restoration Work Group and the Citizens Advisory Committee (CAC) to identify and assess measures to increase funding such as finding new ways to justify and incentivize investment, broadening the scope of potential investors, and integrating HRE CRP priorities in other, related efforts such as the creation of NYSDEC's Regional Action Plan and hazard mitigation/coastal resiliency projects. A primary focus for this action will be the 33 sites recommended for near-term construction as part of the USACE's Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study. HEP will work with the CAC and other partners to advance campaigns required to secure new capital funding identified in its Options for Funding Priorities Report. This could include funding available under the USACE's restoration and other authorities, greater use of environmental benefit agreements, and other sources.

KEY PARTNERS: Restoration Work Group, CAC, USACE, NYSDEC, NJDEP

RESOURCES: Staff and Leveraging, Major Capital Projects

TIMELINE: 2017-2022

OUTCOMES

Short term:

- Identification and support for additional resources for restoration.
- Restoration projects will secure funding in a timelier manner.

Long-term:

- Implementation of additional restoration projects and progress toward the Estuary's goals for target ecosystem characteristics.

H-A-2

COST REDUCTION

Evaluate ways to reduce costs of restoration.

NEED

Restoration projects in the Estuary are costly. Identifying ways to be economical with existing funding will enable additional and/or enhanced projects to move forward in a timely way.

DESCRIPTION

HEP will work with the Restoration Work Group to identify and assess what cost-reduction measures have the potential to help advance individual restoration projects across the Estuary. Potential avenues include better communication of guidance on permitting standards and practices, consideration of bioremediation of sediments, on permitting standards for living shorelines and other restoration work, and encouraging cost-sharing across projects as was done for the Jamaica Bay Marsh Islands and NYC's clean soil bank. Employing community and volunteer stewardship and monitoring is one important approach. HEP-led efforts may include the creation of an estuary-wide hub, engaging corporate involvement, and/or partnering with existing volunteer organizations to assist managers with recruiting participants.

KEY PARTNERS: Restoration Work Group

RESOURCES: Staff and Leveraging

TIMELINE: 2017-2022

OUTCOMES

Short-term:

- Creation of a more streamlined approach towards cost-sharing with partners and access to volunteers.

Long-term:

- A greater number or larger restorations will occur, making progress towards the restoration goals outlined in the HRE CRP and eventually leading to enhanced habitat and ecological health.

Resident and migratory
birds in Jamaica Bay, NY.
Photo: Don Riepe



HABITAT AND ECOLOGICAL HEALTH

OBJECTIVE A

Make progress towards restoring the Estuary's target ecosystem characteristics

H-A-3

ECOSYSTEM SERVICES

Document value of ecosystem services delivered through restoration for decision makers.

NEED

Better documentation of the value (monetary and otherwise) ecosystems provide to humans will help urban restoration projects compete for funding on regional and national levels.

DESCRIPTION

Valuation of ecosystem services has become an important tool for understanding and communicating the benefits of the Harbor Estuary, especially for people outside of the restoration and conservation communities. In partnership with other staff at the Hudson River Foundation, HEP will work with Resources for the Future and an advisory committee to refine ecosystem services valuation for our urban environment. A policy white paper will illustrate how valuation of ecosystem services for restoration projects would be beneficial to managers and funders. It will identify the analytical methods and possible protocols that could be used to incorporate a range of the most important ecosystem services in those decisions. These will include consideration of the value of providing habitat

and nature-based experiences in a densely developed urban environment as well as processes such as improved water quality. The protocol can be adapted for use in future restoration prioritization efforts (see Action H-A-4). Undertaking such a case study analysis for a particular site or TEC project is a possibility for the future. Presentations and other outreach will share this information with communities, local governments, state and federal agencies, and other decision makers.

KEY PARTNERS: HRF, RFF, USACE, EPA, RWG, Academia

RESOURCES: Staff and Leveraging; Grant Projects <\$200,000. Undertaking the case study demonstration project will require additional commitments of time and funding.

TIMELINE: 2017-2019. The initial policy paper expected by 2018.

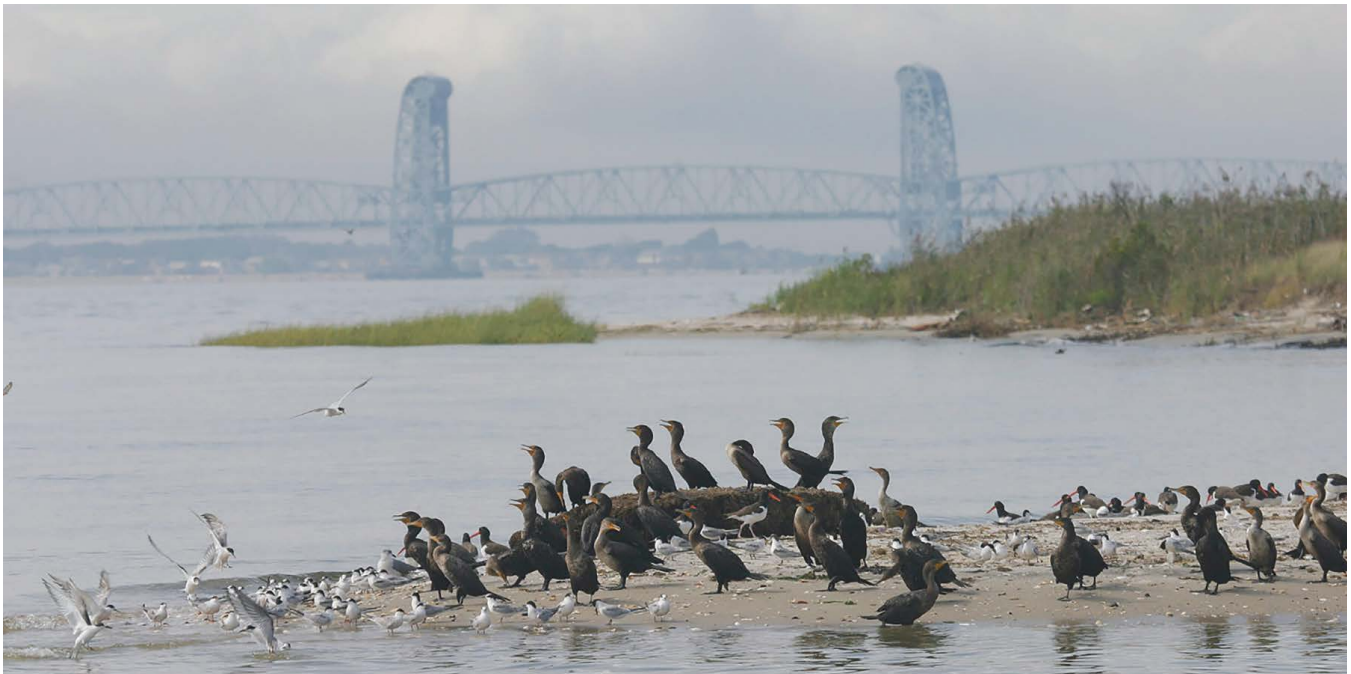
OUTCOMES

Short-term:

- An assessment of how ecosystem services valuation could be used to analyze restoration projects in the estuary.

Long-term:

- Greater understanding of the ecosystem services provided by restoration projects in the estuary.
- Incorporation of ecosystems service valuation as a factor by decision makers.





HABITAT AND ECOLOGICAL HEALTH

OBJECTIVE A

Make progress towards restoring the Estuary's target ecosystem characteristics

H-A-4

PRIORITIZATION

Create a decision making tool for prioritization of restoration opportunities.

NEED

The NY – NJ Harbor Estuary Program has compiled a list of over 300 restoration opportunities within the Hudson-Raritan Estuary study area as part of the HRE CRP. HEP's Restoration Work Group also regularly adds to this list of opportunities after vetting new projects. Identifying the most appropriate restoration projects for different funding opportunities is a challenge for public agencies and conservation groups.

DESCRIPTION

A decision-making tool will help HEP and its partners identify and assess the important or appropriate restoration projects by geography, TEC, or potential funding sources. This effort will build on the existing HRE CRP database, the OASIS GIS mapping platforms, as well as previous efforts by NYC DPR and others. Understanding of specific restrictions on existing grant programs or other available funding sources would increase the utility of the tool. An initial step for determining possible search criteria and the level of detail required for data will be to survey members of the Restoration Work Group for their take on how their agencies could use the tool, as well as other current users of the HRE CRP database. The creation and utility of this tool may also depend on the development of a method for evaluating ecosystem services (see Action H-A-3).

The tool should be comprehensive and user-friendly, as well as adaptable to different scales, TECs, and the changing needs of its users. For shoreline restorations, the tool may consider shoreline typology and include consideration of the shoreline materials being replaced and their relative toxicity. The efficacy of this tool is limited to the completeness and quality of the data used as inputs. Through this process, HEP staff or contractors will assess the availability of the data required and desired, and work towards filling data gaps. HEP staff will assume responsibility of managing the user interface and updating the tool as needed.

KEY PARTNERS: RWG, USACE, NYSDEC, NJDEP, NYC DPR, Academia

RESOURCES: Staff and Leveraging; Grant Projects <\$200,000. Funding will likely be required to develop the decision-making tool.

TIMELINE: 2019-2020

OUTCOMES

Short-term:

- Understanding of user need and availability of the data required for a decision making tool.
- Creation of the decision making tool and integration into an online platform.

Long-term:

- More efficient and appropriate selection of a restoration project when funding is available or restoration is required.
- Additional restoration as tool helps justify projects for funding.



Scientists from Columbia University monitoring the habitat value of our urban shorelines. Photo: HEP



HABITAT AND ECOLOGICAL HEALTH

OBJECTIVE B

Improve the quality and likely success of habitat restoration

H-B-1

RESTORATION BEST PRACTICES

Share research and best practices among partners.

NEED

Restoration in the NY-NJ Harbor can be quite complex, involving a large number of projects and stakeholders. Projects are often designed to meet multiple goals in addition to restoration, such as resiliency and public access. The size of the restoration community necessitates and offers opportunities to learn from successes and mistakes of past restoration projects and to build collective understanding in design, implementation or monitoring of restoration projects.

DESCRIPTION

HEP will continue to promote the exchange of research and best practices through many avenues, notably through meetings of the Restoration Work Group, which provides a regular means of elevating common concerns and facilitating conversation within the restoration community.

Members reach consensus on common goals and objectives, share the lessons learned from their own restorations, and hear presentations from others outside the group that have new research or techniques or data to share. Likewise, HEP will also continue to support the Oyster Restoration and Harbor Herons committees. Their planning and outreach efforts and may launch additional Restoration Work Group committees focused of specific TECs such as shorelines and shallows (see Action B-2). Key deliverables include the bi-annual restoration conference and restoration progress reports.

KEY PARTNERS: Restoration Work Group, Harbor Herons and Oyster Restoration Committees

RESOURCES: Staff and Leveraging

TIMELINE: 2017-2022. This action is ongoing; the Restoration Work Group meets quarterly.

OUTCOMES

Short-term:

- Improved restoration practice and projects.
- Greater learning and collaboration among the restoration partners

Long-term:

- Ensure continuity of community knowledge and experience and help pave the way for the next generation of restoration projects and professionals.

H-B-2

SHORELINE ASSESSMENT

Assess and interpret shoreline and shallow-water habitat condition and value

NEED

The restoration of urban shorelines and shallow water habitat is poorly understood, in large part because there is a limited history of such projects, in comparison to more common wetland restoration projects. Clarification is needed to better define restoration goals, how restoration can improve habitat and biodiversity, and the viability of specific techniques.

DESCRIPTION

HEP will support and undertake research to improve understanding of the ecology of shoreline and shallow water areas, including their projected future conditions. Research topics may include: the value of cleaner waters delivered by stormwater improvements, the importance of shoreline habitat connectivity and how to achieve it, how to assess habitat condition and the benefits of restoration along urban shorelines, biological use by shoreline type or sediment substrate, an assessment of shoreline typology and suitability, the benefits of replacing shoreline materials containing PAHs and heavy metals, upstream/downstream habitat connectivity, and how to assess the relative impact to shorelines from development or the relative value of different habitat types.

This work will continue past efforts by HEP and other partners to assess the value of urban shorelines and shallow water habitat. Additional grant funding will enable new research efforts and pilot restoration projects. Any pilot restoration efforts are likely to be conducted in cooperation with public landowners along the waterfront including park agencies, PANYNJ, and/or EDC. A key consideration will be the shoreline targets established by the Hudson River Estuary Program.

KEY PARTNERS: HRF, Academia, TNC, NYCDPR, NJDEP, NYSDEC, Hudson River Estuary Program, HREP, HRPT, EDC, PANYNJ

RESOURCES: Staff and Leveraging; Grant Projects >\$200,000

TIMELINE: 2017-2022

OUTCOMES

Short-term:

- Identification of important questions and creation of consensus research agenda.
- Undertake and publish research or pilot restoration projects.

Long-term:

- Improved understanding and practice of restoration of shorelines and shallow water habitat.



HABITAT AND ECOLOGICAL HEALTH

OBJECTIVE B

Improve the quality and likely success of habitat restoration

H-A-B-3

RECONTAMINATION

Understand the risks of recontamination of restored sites.

NEED

The polluted nature of our waterways, in terms of both water quality and sediment contamination, has raised concerns that restored estuarine ecosystems could become recontaminated over time. This recontamination may be more harmful than leaving the project area in its current state because, in some cases, it may lead to greater bioaccumulation of toxins in marine animals.

DESCRIPTION

HEP will gather and summarize available information and organize one or more meetings of interested parties to identify the current state of knowledge and regulatory and management concerns. The goal will be to develop a shared understanding and possible agreement among HEP's partners, including but not limited to USACE, NOAA, EPA and USFWS, regarding how to approach restoration projects given this concern, and what further research efforts are needed. Improved understanding of the current and future levels of sediment contamination resulting from the Contaminant

Assessment and Reduction Project referenced under Maritime Objective A may be particularly useful.

HEP staff will produce a report detailing the result of the meetings and any further steps required. Based on this initial assessment, HEP and the Hudson River Foundation may support such research and/or seek funding to undertake further steps which may include conducting an ecological risk assessment or developing a protocol for analyzing risk on a project basis.

KEY PARTNERS: Restoration Work Group, USACE, NOAA, EPA, USFWS, HRF

RESOURCES: Staff and Leveraging; All efforts beyond initial meetings will require grant projects ><\$200,000

TIMELINE: 2018-2019

OUTCOMES

Short-term:

- Greater understanding on scope of the issue and state of knowledge, available remedies and data needs.
- Common agreement on how to address concerns through the establishment of a protocol, method of site selection or other agreement.

Long-term:

- Improved restoration projects and practices.



Recently restored salt marsh, Woodbridge NJ.
Photo: Great Ecology



HABITAT AND ECOLOGICAL HEALTH

OBJECTIVE C

Support habitat and restoration monitoring and the utility of monitoring data

H-C-1

HABITAT MONITORING

Increase support for monitoring and consistency among metrics.

NEED

Insufficient monitoring is taking place for restoration projects and habitat quality in the NY – NJ Harbor Estuary. The monitoring that is taking place is not consistent, and offers limited opportunities for practitioners to compare projects, assess long terms trends for wild-life and biodiversity and improve practice.

DESCRIPTION

HEP will identify opportunities (e.g. permitting, project funding, dedicated funding) for increasing the extent and duration of project and site monitoring, including evaluating overlapping purposes, needs, and metrics to determine whether there are ways to leverage efforts and encourage (or require) consistent data collection and possible entrance into a shared database. Creation of a shared database will require grant funding, while new support for monitoring will require sources of on-going operational funding.

HEP will specifically work with partners to determine common monitoring metrics for Natural and Nature Based Features (NNBF), and engage with other regional groups to build off of previous research. This work is currently managed by SRIJB and has been funded through grants from NYSERDA and NYSDOS. A focus will be greater consistency with Hudson River Estuary Program and NYS RECAP. Other key aspects of this action will be expanding and improving Citizen Science efforts, supporting long-term monitoring of natural shorelines, and assessing the role of monitoring for addressing climate change risks posed by increased number of invasive species and range shifts for native species.

KEY PARTNERS: USACE, NOAA, NYSDEC, NYSDOS, NYCDPR, NYCDEP NJDEP, SRIJB, IEC, TNC, Hudson River Estuary Program, Academia, Consultants

RESOURCES: Staff and Leveraging, Grant Projects <\$200,000; On-going operating needs

TIMELINE: 2017—2020

OUTCOMES

Short-term:

- Identification of core list of metrics and protocols for monitoring NNBF projects.
- Evaluation and actions to improve the collection and sharing of monitoring data, possibly including creation of a shared database.

Long-term:

- Advancement in the design, implementation, and management of restoration projects.
- Greater understanding of habitat condition.

H-C-2

DATA SYNTHESIS

Synthesize existing monitoring data to better understand and communicate trends.

NEED

In the past, many restoration projects in the NY – NJ Harbor have included monitoring, either because it was required by regulators or just done as a best practice. Unfortunately, there has been no formal or informal collection of the restoration monitoring data. This monitoring data is a key element to improving our understanding of what makes a restoration successful and sustainable.

DESCRIPTION

HEP will work with the Restoration Work Group, Water Quality Work Group, and STAC to synthesize monitoring data for water quality, fisheries, and other data sets to support analysis of and communication about ecological health. Compilation of past monitoring data will provide a more complete picture of lessons learned from previous restorations. This data can be collected through outreach to the agencies conducting the restorations, regulators or consultants. HEP will also assess and potentially create a shared monitoring database (see Action H-C-1).

Information and metadata for long term monitoring programs for some key environmental indicators is being compiled in the Environmental Monitoring Plan and will be shared through a web-based application and State of the Estuary report.

KEY PARTNERS: Restoration Work Group

RESOURCES: Staff and Leveraging

TIMELINE: 2018-2020

OUTCOMES

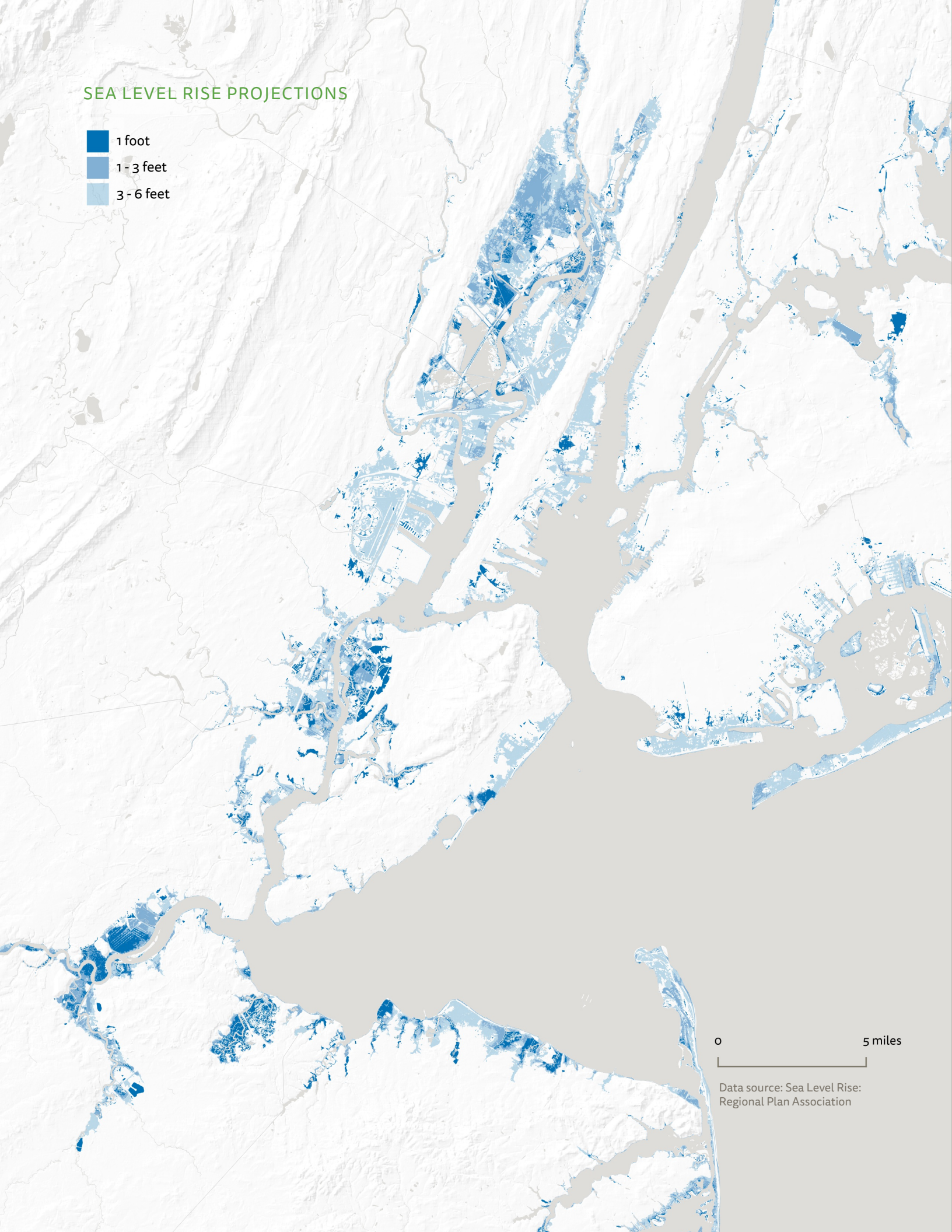
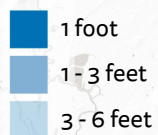
Short-term:

- Understanding of monitoring trends among the restoration/science community.
- Data will be ready for the shared monitoring database when it is designed.

Long-term:

- Advancement in the design, implementation, and management of restoration projects.

SEA LEVEL RISE PROJECTIONS



0 5 miles

Data source: Sea Level Rise:
Regional Plan Association



HABITAT AND ECOLOGICAL HEALTH

OBJECTIVE D

Advance understanding and incorporation of climate change impacts in habitat management and restoration

H-A-D-1

SEA LEVEL RISE

Ensure incorporation of sea level rise into restoration and management practices.

NEED

Historic sea level rise is expected to accelerate in the next 50 years. Restoration projects that do not incorporate sea level rise in their design may not be sustainable in the future.

DESCRIPTION

HEP will support integrating climate change considerations into restoration practices (e.g. encouraging partners to follow NOAA, New York State, and New York City guidance) and pursue opportunities to expand or adapt guidance for conditions here in the Harbor Estuary.

HEP will work with its partners to assess and analyze the restoration opportunities in the HRE CRP for their adaptability to sea level rise, including conservation projects that provide an upland buffer and pathways for migration of existing wetlands, and seek to prioritize such efforts. HEP and HRF will support research analyzing the impacts of climate change on restoration efforts, including comparing adaptive responses of *Spartina* and *Phragmites* marshes; assessing the pros and cons of restoration that includes rock structures and other means of stabilizing shorelines; and advancing techniques for addressing barriers to marsh migration, elevation, and sediment budgets.

KEY PARTNERS: RWG, USACE, NJDEP, NYSDEC, SRIJB, NYCDPR, NOAA, HRF, Hudson River Estuary Program, NGOs

RESOURCES: Staff and Leveraging; grant projects >< \$200,000

TIMELINE: 2018-2022. Some parts of this action are ongoing; however, priority projects should be identified by the RWG by Fall 2018.

OUTCOMES

Short-term:

- Incorporation of sea level rise as a factor in restoration design and implementation.

Long-term:

- Reduce loss of habitat due to sea level rise.

H-A-D-2

BUYOUT RESTORATION

Advance conservation and restoration planning for properties eligible or already acquired through flood plain/ buyout programs.

NEED

In order to reduce risk to people and property, the states of NY and NJ as well as the City of New York have purchased houses and other property in flood prone areas. Only a few of these sites have had long-term planning undertaken with respect to identifying a long-term owner and manager, and determining management objectives. Many more buyout properties represent unique opportunities to pursue larger-scale restoration projects.

DESCRIPTION

HEP will work with the Restoration Work Group and other partners to determine status of these buyout properties, landowner needs, and to identify restoration opportunities. This includes assessing opportunities to allow for marsh migration and for improving habitat connectivity between in-water to upland areas. An initial exploration and meeting with relevant state and city agencies may lead to identification of planning projects requiring grant funding. The Oakwood Beach area of Staten Island may be a good pilot project.

KEY PARTNERS: USACE, NJDEP, NYSGOSR, NYSDEC, NYCDPR, NOAA, Hudson River Estuary Program, NGOs

RESOURCES: Grant projects < \$200,000

TIMELINE: 2018-2020

OUTCOMES

Short-term:

- Properties purchased to reduce risk will be evaluated for restoration opportunities and suitable ones will be added to the HRE CRP list.

Long-term:

- Appropriate properties will be restored, leading to progress towards the TEC goals from the HRE CRP and greater habitat for wildlife.