



The Tidal Exchange

Newsletter of the New York ~ New Jersey Harbor Estuary Program

Winter 2004

THIS ISSUE

HARBOR ESTUARY NEWS

CONTENTS

1

CPIP:

The Comprehensive Port Improvement Plan for the Port of New York and New Jersey

Laura Shabe

4

New Jersey's Harbor-Wide Survey
A Cooperative Effort

Veronica Crow

5

Graniteville Swamp Woods
HEP Priority Acquisition Site AK7

Carolyn Summers

7

Species Profile
Canada Mayflower

Mariellé Anzelone

8

Announcing the 2004 HEP Mini-Grant Program

8

Faces of the Harbor Estuary Program

CPIP: The Comprehensive Port Improvement Plan for the Port of New York and New Jersey

Laura Shabe

The Concept

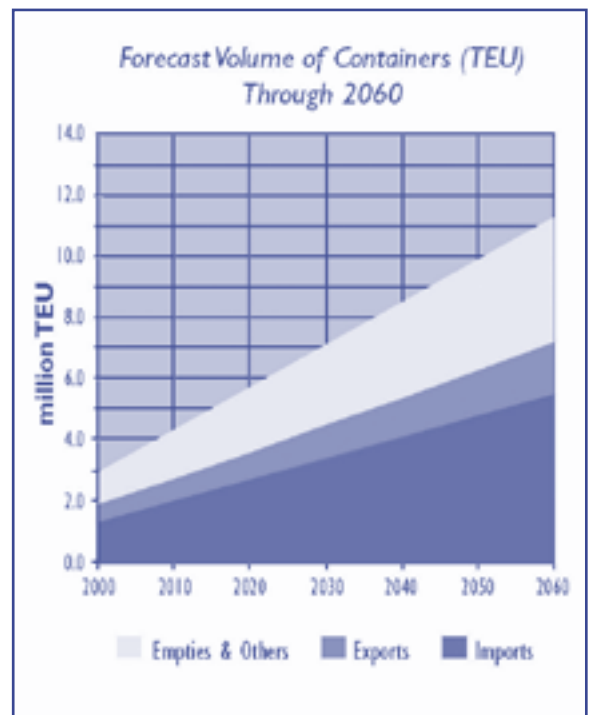
The Port of New York and New Jersey (Port) receives and distributes all types of goods to one of the largest consumer markets in the United States. As the third-ranking port in the US and the largest on the US Atlantic coast, the Port serves as an important economic engine for the region. The Port Authority of New York and New Jersey estimates that the Port supports approximately 229,000 jobs and generates nearly \$10 billion in wages in the region each year. In 2002, the Port handled 3.7 million TEU (twenty-foot equivalent unit) of containerized cargo, nearly 589,000 automobiles, 21.6 million tons of general cargo and over 48.4 million tons of bulk cargo (includes dry, semi and liquid bulk and crude oil) – and these numbers are growing. The total volume of ocean borne cargo that passes through the Port's terminals is projected to double in the next 20 years and triple over the next 60. The most dramatic increases are expected in containerized cargo with a four-fold increase in volume by 2060.

Cargo volumes do not occur and dissipate in

a vacuum. On this side of its ocean voyage, cargo moves through the region's existing network of highways, waterways and railways, sharing the network with a multitude of other users. With population and economic growth expected throughout the region in the coming decades, the pressure on an already congested system will increase.

In light of the anticipated growth in ocean borne cargo volumes, it became clear that steps should be taken to develop an economically viable and

(continued on page 2)





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The Tidal Exchange

Winter 2004

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The Tidal Exchange is a publication of the New York – New Jersey Harbor Estuary Program (HEP), a partnership of federal, state and local governments, scientists and citizens working together to protect and restore the natural resources of the estuary. The purpose of the newsletter is to promote an informative dialog on issues related to the Harbor Estuary Program.

The HEP is sponsored by the States of New York and New Jersey and the US Environmental Protection Agency. The HEP Management Committee consists of representatives from the US EPA, NJ DEP, NYS DEC, NY and NJ local governments, US ACE, US DOI, NOAA, Port Authority of NY & NJ, Interstate Environmental Commission, NJ Harbor Dischargers Group, NYS DOS, Science & Technical Advisory Committee and Citizens Advisory Committee.

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CPIP for the Port of New York and New Jersey

(from page 1)

environmentally sustainable Port for future generations. Following on the heels of the US Army Corps of Engineers' Harbor Navigation Study (1999), the Comprehensive Port Improvement Plan for the Port of New York and New Jersey (CPIP) was initiated in 2000 by a team of Federal, State and local agencies. These agencies include the US Environmental Protection Agency, Federal Highway Administration, US Army Corps of Engineers, NJ Department of Transportation, Empire State Development Corporation, Port Authority of NY & NJ and New York City Economic Development Corporation.

The CPIP is a project with two parts. The CPIP Plan will define improvement options for the Port facilities and for the transportation systems serving them. The CPIP Environmental Impact Statement (EIS) will evaluate port and transportation improvement alternatives, derived from the Plan's options, to identify possible social, economic, and environmental effects. The Plan and EIS are being prepared concurrently, and in a coordinated and iterative manner.

Two consultant teams have been hired to complete the study. Sir William Halcrow & Partners in association with Gannett Fleming is the Plan consultant. The EIS consultant is a joint venture between Parson Brinkerhoff Quade and Douglas, and Lawler, Matusky and Skelly Engineers.

Cargo Forecasts

As a matter of convention, CPIP adopted the Harbor Navigation Study's timeframe of 2060. Forecasting the volume of trade that a particular port will handle 60 years into the future is filled with uncertainties. The analysis involves

a number of variables, each of which becomes increasingly imprecise into the future. Nevertheless, based on current knowledge of the distribution of natural resources and of population and economic trends, it is possible to make a reasonable estimate of future volumes of trade. The CPIP forecast for containerized cargo is shown in Figure 1. 5.6 million TEU is forecast by 2020; 11.3 million TEU by 2060. Our complete reports on forecast methods and results are available on www.cpiponline.org. These forecast numbers must be compared ultimately to the existing capacity of the Port – to the ability of the Port's facilities to handle cargo – to be meaningful for port development.

The System-wide Approach

There has been no shortage of Port-related studies. CPIP, however, is the first attempt to undertake a system-wide approach to the planning of the Port. All of the harbor's major cargo handling facilities, with the exception of crude oil facilities, in both states (see map) are being studied simultaneously for their suitability to accommodate the forecasted cargo types and volumes*. Our results on the aggregate capacity of the Port indicate that if cargo facilities could achieve an average throughput of 3,870 lifts/acre/year, no major acquisitions of land would be required until 2037. However, the Port's average throughput in 2001 was less than 1,540 lifts/acre/year. The complete report on port capacity is also available on the CPIP website.

Transportation Capacity

CPIP is wrapping up its study of the capacity of the highway and rail networks serving the Port. An important finding has been that despite public perception, port-related truck trips make up a relatively small percentage (0.07%) of total highway vehicular trips on a regional level. In the Inner Port Area, which includes roads with direct connections to Port

facilities, this percentage is higher (7.8%). Similarly low percentages were also found for rail. During this study phase, the NYS Department of Transportation, New York Metropolitan Transportation Council and North Jersey Transportation Planning Authority became key advisors to the CPIP agencies. This report will be released to the public in early 2004. Fact sheets with the preliminary findings can be found on the website.

EIS Activities

The first phase of public scoping meetings for the CPIP EIS has just concluded. Meetings were held in Bayonne, Jersey City, Newark, Elizabeth, Staten Island, Red Hook and (South) Brooklyn and the record remained open for receipt of written comments through February 14. Interagency meetings with each of the States' regulatory agencies were also held this past fall. The Notice of Intent for the CPIP EIS appeared in the Federal Register on April 18, 2003. The City Record published New York City's Notice of Intent on November 6, 2003. As the EIS portion of CPIP progresses and becomes more tangible, the CPIP agencies look forward to working more closely with the other Federal, State, and local regulatory agencies.

What's next?

In order to begin to match up total cargo demand with the port capacity of individual sites, CPIP is developing a series of "land allocation scenarios" for 2060. These scenarios will illustrate reasonable ways in which cargo volumes, divided by type (container, bulk, automobiles, general cargo), can be handled using a combination of existing Port facility footprints, Port facility expansions and new Port

facilities. The types and amounts of cargo allocated to each port site will in turn influence the transportation flows in and out of the Port. CPIP will analyze and evaluate the scenarios and the associated transportation flows as the project progresses. CPIP plans to share the scenarios with the public early in 2004.

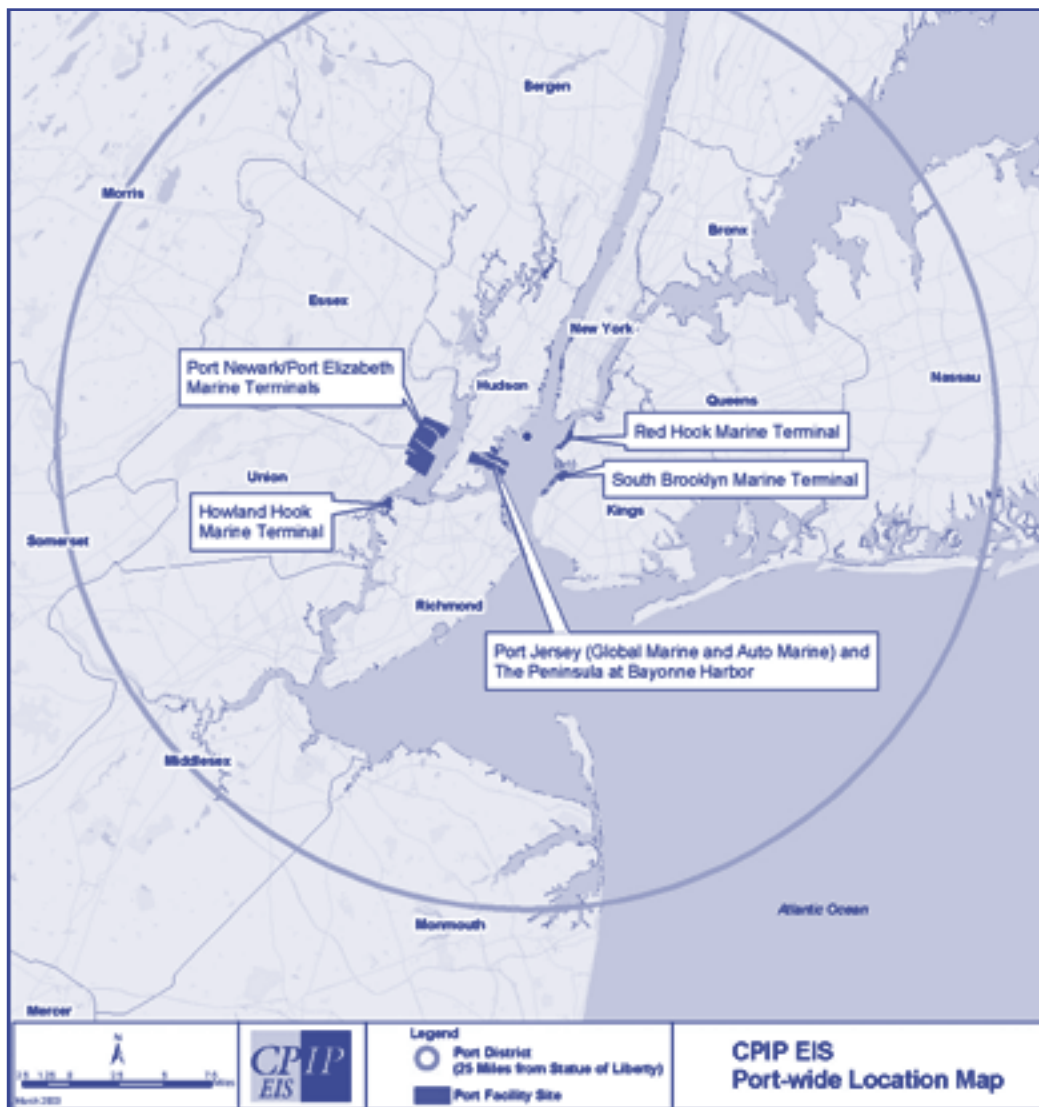
Epilogue

Three years in and simply put, the study has not been easy. Undertaking an academic understanding of the Port's developing role in the region from an economic, engineering and environmental point of view would be challenging. Add to the mix the goal of meeting the desires and needs of multiple government agencies and interest groups simultaneously, and you have a monumental task at hand – not just for the consultants, but

for each of the agency participants. It is an extraordinary project, and a testament to their dedication to the future of the Port. ❖

Laura Shabe coordinates the project on behalf of the CPIP agencies. For more information on CPIP visit www.cpiponline.org.

* The Harbor Navigation Study (HNS) was prompted by the rise in world-wide container ship size. Taken in tandem with forecasted increases in container cargo volumes, the resulting transformation of the container shipping industry drives the development of the CPIP. In contrast, crude oil vessels are not expected to increase substantially in size or draft and thus were not a major component of the HNS project justification. Consequently, CPIP is not planning for crude oil facility expansions. As dry, semi, and other types of liquid bulk currently coexist with container facilities in the Port, their facilities are being considered together with Port-wide container facility improvements.



New Jersey's Harbor-wide Survey

A Cooperative Effort

Veronica Crow

The New Jersey Harbor Dischargers Group (NJHDG) is initiating a long-term ambient water quality monitoring program in the New Jersey waters of the New York/New Jersey Harbor that will perfectly compliment the 100-year effort of the New York City Harbor Survey. The primary goals of the long-term water quality monitoring program include providing baseline data reflecting the current status of water quality in the Harbor, and documenting changes in water quality over time.

The previous lack of monitoring data for the New Jersey waters of the harbor had been recognized by the NY-NJ Harbor Estuary Program (HEP) as a significant concern. An ad hoc harbor-wide monitoring group was formed in 2002 to assess existing water quality monitoring efforts in the harbor, and to make recommendations to fill data gaps. This group included representatives from the New Jersey Harbor Dischargers Group, Environmental Protection Agency (EPA), New Jersey Department of Environmental Protection (NJDEP), New York City Department of Environmental Protection (NYCDEP), New York State Department of Environmental Protection, National Park Service, Interstate Environmental Commission (IEC), and New Jersey Sea Grant.

While the group made recommendations about what needed to be done, it was the NJHDG who made the long-term commitment to this program because they were convinced that they need a robust water quality database to allow the member agencies to make informed



PVSC's sampling vessel R.V. Passaic River. Photo by Veronica Crow

decisions about future needs, and to allow the group to be confident that regulatory decisions are made based on high quality environmental measurements.

To accomplish the goals of this program, the NJHDG contracted the services of Great Lakes Environmental Center (GLEC) to develop a Quality Assurance Project Plan that ensures that the sample collection techniques and the laboratory analyses are of the highest quality and that the program is comprehensive enough to fulfill the data needs of the HEP, EPA and NJDEP. GLEC has also been contracted by the NJHDG to develop a database to store and easily access the data collected under this program. An evaluation of the data collected during the first year of the program will also be conducted by GLEC. HEP has shown its overwhelming support of the program by providing the NJHDG with a \$20,000 grant for GLEC's data evaluation and database development.

"The EPA and NJDEP had both expressed interest in seeing this vital study started so we decided to take a position of leadership, as the largest plant that discharges into the New York Harbor and provide our services," said Robert Davenport, Executive Director of the Passaic Valley Sewerage Commissioners (PVSC). PVSC and the other members of the NJHDG are partnering to provide field and analytical support. The NJHDG

consists of ten agencies, representing twelve sewage treatment plants, which discharge to the New Jersey portion of the Harbor Estuary. This Group was established in the early 1990's to assure that Harbor-related pollution monitoring and control programs are implemented in a cost effective and scientifically defensible manner.

To develop this new data set, water quality samples will be collected weekly May through September and twice monthly October through April. The parameters to be measured include (among others) dissolved oxygen, suspended solids, fecal coliform bacteria, nitrogen, phosphorus and salinity. Sample site locations include portions of the Hackensack, Hudson, Passaic, Rahway and Raritan Rivers, Newark Bay, Upper New York Harbor, Raritan Bay and the Arthur Kill (see Map 2).

Monitoring and analyses will be conducted by the NJHDG members' personnel. Passaic Valley Sewerage Commissioners is providing a sampling vessel, a mobile laboratory, a person to operate the boat or to drive the mobile lab, a person to perform sample collection, and lab services for a portion of the parameters. Middlesex County Utilities Authority (MCUA) and Bergen County Utilities Authority (BCUA) are providing laboratory services for the remaining parameters and Joint Meeting of Essex and Union Counties (JMEUC), Rahway

Valley Sewerage Authority (RVSA), Linden Roselle Sewerage Authority (LRSA), Secaucus Municipal Utilities Authority, North Hudson Sewerage Authority (West New York and Hoboken plants), Edgewater Municipal Utilities Authority, and North Bergen Utilities Authority (Central and Woodcliff plants) are providing personnel on a rotating basis to aid in sample collection and sample delivery to the laboratories for analyses.

The NJHDG's recently-initiated monitoring effort will provide important scientific data that will allow for accurate representation of New Jersey waters when assessing conditions and making management

decisions. This is especially important considering that many of the waters are shared with the State of New York.

The Harbor Estuary Program would like to see the major data sources from the NJHDG and the NYC Harbor Survey, as well as data that will be provided by the EPA helicopter and other agencies, combined into an annual harbor-wide water quality report. This would be the first time that such a comprehensive effort for the harbor has been undertaken. ❖

Veronica Crow is a Senior Scientist with the Passaic Valley Sewerage Commissioners.

Graniteville Swamp Woods

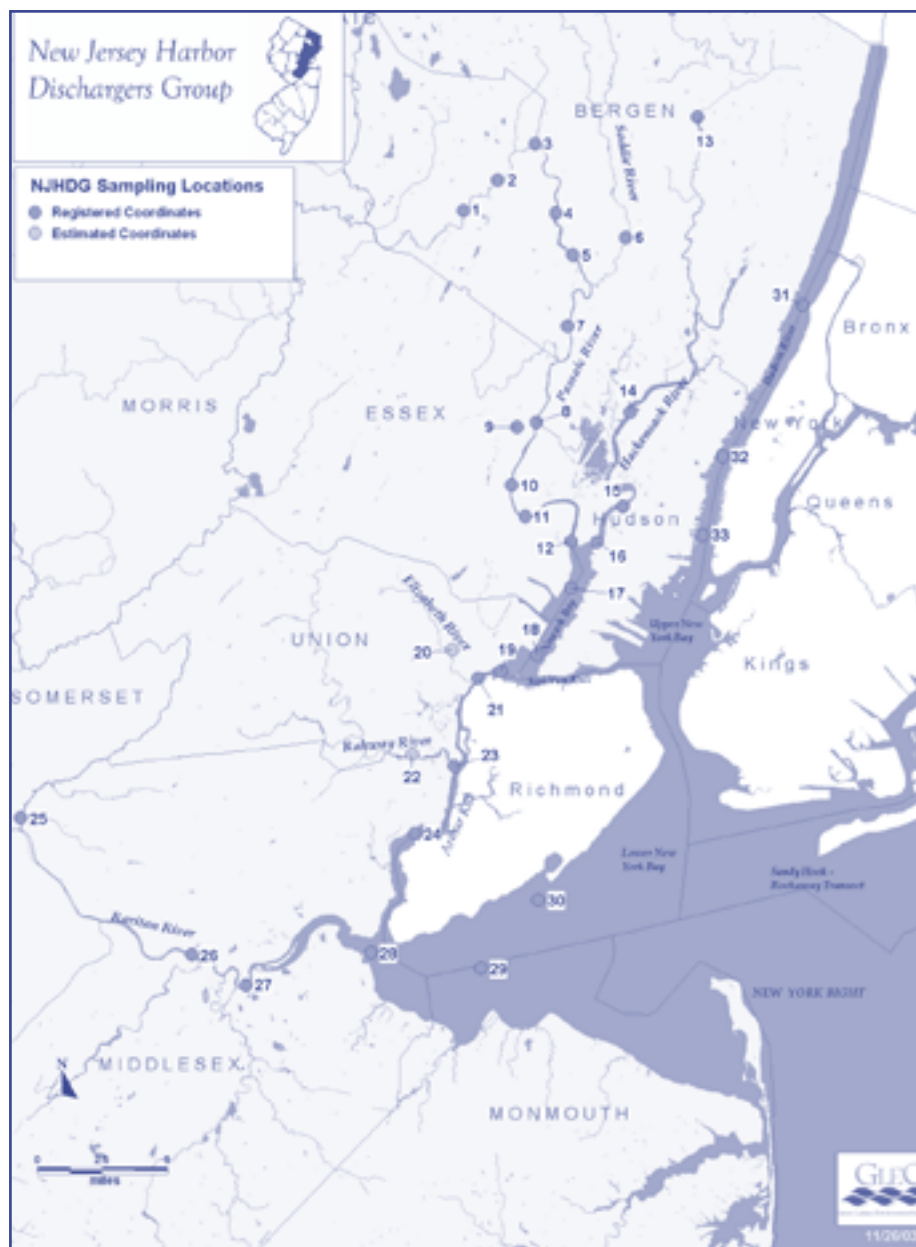
HEP Priority Acquisition Site AK7

Carolyn Summers

Graniteville Swamp Woods is part of the Arthur Kill Complex in northwest Staten Island, an area famous for its patchwork of pristine tidal wetlands and associated uplands. Graniteville Swamp forms part of the headwaters of Old Place Creek -- the largest foraging area for what was once the City's largest heron rookery. The site is roughly triangular -- with Forest Avenue to the northwest, South Avenue to the east, and Goethals Road to the south -- and encompasses a variety of high-quality contiguous habitats including swamp woods, open water, and fresh and brackish marsh habitat, mostly privately owned. Graniteville Swamp Woods is a NY/NJ Harbor Estuary Program High Priority Acquisition Site [AK 7] and has been listed by several sources as a priority acquisition for its ecological significance, including -- US Fish and Wildlife Service's *Significant Habitats and Habitat Complexes of the New York Bight Watershed* (1996), The Trust for Public Land and New York City Audubon Society's *Harbor Herons Report* (1991) and *Islanded Nature* (2001). Graniteville Swamp is also distinguished as a New York City Land Protection Priority by the Regional Advisory Committee for the New York State Open Space Conservation Plan.

The region, once known for its fresh spring water and blueberries, is a boggy woodland connecting upland fresh water sources with tidal marshes of Old Place Creek. Though the springs have been buried

(continued on page 6)



Graniteville Swamp Woods

(from page 5)

by development, seepage to the northeast remains, ultimately leading to Goethals Bridge Pond. This connection helps maintain stable water levels in Goethals Bridge Pond, a critical site for wading birds and waterfowl, and helps prevent flooding in the region. Additionally, the well preserved upland and swamp forest at Graniteville provides a significant ground-water recharge zone. Most important is the connection to Old Place Creek. Overflow from minor creeks radiating through the swamp forest drains southeast into approximately twelve acres of brackish marsh. This marsh contains both *Phragmites* as well as native salt-marsh vegetation such as *Spartina alterniflora*, and is subject to tidal flushing. From here a major tributary runs under the Staten Island Expressway to Old Place Creek - “the most extensive, meandering creek in northwest Staten Island” (US Fish and Wildlife Service 1996).

Thirty acres of the 45-acre site are comprised of deciduous swamp forest, which gradually rises into a typical second growth upland forest – a natural continuity rarely found in such a fragmented landscape. More saturated areas are dominated by sweetgum (*Liquidambar styraciflua*) primarily and red maple (*Acer rubrum*) secondarily; and also include swamp white oak (*Quercus bicolor*) and black tupelo (*Nyssa sylvatica*). The New York State Natural Heritage Program has recently given the red maple-sweetgum swamp a rank of S1S2, a designation used to describe communities that are rare and vulnerable throughout the State. The upland is dominated by northern red oak (*Quercus rubra*), white oak (*Quercus alba*), pin oak (*Quercus palustris*), and mockernut hickory (*Carya tomentosa*), with a dense understory of spice bush (*Lindera benzoin*), red chokeberry



Aerial Orthophotograph of Graniteville Swamp Woods and Old Place Creek; note the direct connection between the two.

(*Aronia arbutifolia*), cinnamon fern (*Osmunda cinnamomea*), and high bush blueberry (*Vaccinium corymbosum*). Rounding out the series of ecosystems is a freshwater wetland with open water – part of a completed restoration project. This area supports common cattail (*Typha latifolia*), silky dogwood (*Cornus amomum*), common arrowhead (*Sagittaria latifolia*), and bulrushes (*Scirpus sp.*) among other species.

Extensive development around Graniteville Swamp Woods threatens to turn this suite of habitats into a biogeographical island. It is one of the last parcels of wooded wetland left north of the Staten Island Expressway, offering quality interior habit and significant resting and foraging grounds for a diversity of migratory and resident birds. In 2003, over 70 species of birds were recorded, including NJ listed Cooper’s hawk (*Accipiter cooperii*) and NY and NJ listed northern harrier (*Circus cyaneus*), American Woodcock (*Scolopax minor*), white-crowned sparrow (*Zonotrichia leucophrys*), Canada warbler (*Wilsonia canadensis*), Kentucky warbler (*Oporonis formosus*), and black-throated blue warblers (*Dendroica fusca*). City of New York Parks & Recreation scientists recorded wood thrush (*Hylocichla mustelina*), American redstart (*Setophaga ruticilla*),

and swamp sparrow (*Melospiza georgiana*) as probable breeders. Birds are not alone in using the site, and each July red chokeberry shrubs provide sustenance for the larvae of the striped hairstreak butterfly (*Satyrrium liparops*). Other butterflies found at the site are the frosted elfin (*Callophrys irus*) and the salt-marsh skipper (*Panoquina panoquin*). Noteworthy herbaceous plants have also been observed at Graniteville including trout lily (*Erythronium americanum*) and extensive beds of Canada mayflower (*Maianthemum canadense*). Spotted this year for the first time at Graniteville was Turk’s cap lily (*Lilium superbum*), a plant considered rare in the City. Also, Graniteville is the only place in the City to find lance-leaved violet (*Viola lanceolata*), a beautiful white flower with purple veination that grows in sunny or partially shaded wet meadows and marshy edges. ❖

Carolyn Summers prepared this site profile with help from Tali Vardi and Nathanael McVay, New York City Department of Parks & Recreation, Natural Resources Group. Graniteville Swamp Woods has been a long-standing priority of HEP. Word of potential development at Graniteville has recently come to the attention of the Habitat Workgroup.

Canada Mayflower

Maianthemum canadense

Mariellé Anzelone

Walking through Arden Heights Woods on Staten Island in late spring, a woodland ambler may notice a thick, contiguous herbaceous layer underfoot. In May, the forest floor becomes a carpet of shiny green leaves punctuated by small spires of white. This is Canada mayflower.

A member of the lily family, *Maianthemum canadense* is found in HEP Priority Habitat sites such as Inwood Hill Park in Manhattan, Pelham Bay Park in the Bronx, and Graniteville Swamp Woods and Long Pond Park in Staten Island. The plant is present in 31 parks in all 5 boroughs except Brooklyn.

Canada mayflower is a perennial herb that reproduces vegetatively from slender underground rhizomes, often forming “carpets”. A single colony may cover hundreds of square meters and range in age from 30 to 60 years old. An individual stem produces two to three alternate leaves if it is going to flower or a single egg-shaped leaf if it is vegetative.

Shoots usually appear in late April, before the leaves of the overhanging woody vegetation emerge. Canada mayflower is a spring ephemeral, meaning it has a small window of opportunity in which to photosynthesize each year. Once canopy species leaf out, the window has closed; then mayflower’s inflorescences appear. Each raceme bears ten to thirty small (0.5cm diameter), white flowers. Those at the bottom of the cluster open first, continuing sequentially up the inflorescence over a four-week period.

Pollen limitation is a problem for spring ephemerals, which may bloom before enough pollinators are available. Such visitors to Canada mayflower include bumblebees, honey bees, bee flies, and syrphids. Because its pollen is not compatible between flowers within the same colony, Canada mayflower’s seed production depends upon visiting insects to carry pollen between genetically differentiated populations.

If insect visitors are successful, fruits appear by mid-June. One to four seeds are encased in red fleshy berries, which mature within 30 days. These fruits may persist into winter or may be eaten by birds or small mammals. However, the emergence of a new plant from seed is rare. *M. canadense* has little to no seed rain or seed bank.

In its habitat of undisturbed moist woods, Canada mayflower is a common component. It often grows along the upland edges of swamp forests, but it is also found on a continuum of well drained to saturated soils. It does poorly on acidic soils below 4.5 to 5.5 pH. Shade tolerant, it is one of few plants that can grow under the umbrage of beech trees.

The frequency and ecological amplitude with which *Maianthemum canadense* occurs in the five boroughs makes it an ideal biological indicator. As an environmentally sensitive and late successional species, we are monitoring its populations to gauge the health of the City’s mesic forests. ❖

Mariellé Anzelone is a Plant Ecologist with the New York City Department of Parks & Recreation Natural Resources Group.



Canada mayflower colony in bloom. Photo courtesy of the Nova Scotia Museum.

Announcing the 2004 HEP Mini-Grant Program

The Harbor Estuary Program is pleased to announce the availability of \$50,000 for the 2004 HEP Mini-grant Program. Grants of up to \$5,000 will be awarded for projects that promote understanding of and participation in the protection and restoration of the Estuary.

The HEP Mini-grant Program supports and encourages the efforts of citizen stewards by funding projects that:

- emphasize that the NY-NJ Harbor Estuary ecosystem is a living environmental and social resource;
- demonstrate that the public can help to protect the Estuary;
- motivate people to actively participate in its restoration;
- utilize innovative activities to involve people and encourage local action;

- and increase public awareness and education.

Projects must take place within the core area of the Harbor Estuary Program to be eligible for mini-grant funding. For application instructions, proposal forms, and a list of previously funded projects, please visit the HEP website.

**Proposal Deadline:
Friday, March 26**

www.harborestuary.org/minigrants.htm

Faces of the Harbor Estuary Program

As he begins a new chapter of his distinguished career, HEP wishes **William J. Muszynski** the best as he begins a detail at the Delaware River Basin Commission and steps down

as Alternate Chair of the HEP Policy Committee. Mr. Muszynski has been integrally involved in HEP since its inception, and we would like to express our gratitude for his personal commitment to the environment and human health, which made him an invaluable part of HEP. Since 1985, he served alternately as the EPA Region 2 Deputy Regional Administrator and Acting Regional Administrator.

We also welcome **Kathleen C. Callahan** as the new Alternate Chair of HEP Policy Committee. Ms. Callahan has been named the new Deputy Regional Administrator for EPA Region 2. In her former position as Director of Environmental Planning and Protection for Region 2, she was regularly involved with HEP and has a strong familiarity with the issues the Harbor faces.

Would you like to change your address or add someone to our mailing list?

Provide changes or additions below, cut out or copy this section (include mailing label to the right so we can find you in our records) and mail to the Harbor Estuary Program Office, 290 Broadway, 24th Floor, New York, NY, 10007.



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Harbor Estuary Program

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