



# The Tidal Exchange

Newsletter of the New York ~ New Jersey Harbor Estuary Program

Summer 2003

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### HARBOR ESTUARY NEWS

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## Big Egg Marsh Restoration Pilot Project To Begin at Jamaica Bay Wildlife Refuge

George Frame

The National Park Service's (NPS) Gateway National Recreation Area is preparing to implement a pilot salt marsh restoration project at Jamaica Bay Wildlife Refuge's Big Egg Marsh. Natural resource scientists from Gateway's Division of Natural Resources (DNR) and Jamaica Bay Unit, and New York State Department of Environmental Conservation (NYSDEC) developed the Big Egg Marsh project as a small-scale experimental restoration. The project objectives are to evaluate: (1) results of a new method of sediment transfer and placement used to increase marsh elevation, (2) growth of marsh vegetation

through a thin layer of sediment, and (3) pre-treatment and post-treatment inventory and monitoring information. The project, scheduled to begin in late August 2003, was planned in response to the extensive salt marsh losses and associated degradation in Jamaica Bay first reported by the State of New York.

According to NYSDEC's 2002 report, Jamaica Bay's protected salt marsh islands halved in area since 1924, when 2,300 acres existed. The marsh islands have experienced an accelerated loss from 26 acres per year in the 1970s to the current 44 acres per year. This loss is occurring in a protected wildlife refuge, and does

(continued on page 6)



Location of the Big Egg Marsh Pilot Project.



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### The Tidal Exchange Summer 2003

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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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# Exploring Estuary Education

## Updating the Harbor Estuary Program's Teacher's Guide

Kate Johnson

One of the main goals of the Harbor Estuary Program is to increase public awareness and appreciation of the environment that surrounds us. We have found that one of the most effective ways to accomplish this goal is by reaching out to some of our most enthusiastic

citizens— students and teachers. An estuary's role as a transition zone between land and sea, as well as between fresh and salt water, make it an ideal research laboratory for scientists and students alike. As estuaries are some of the most productive ecosystems on earth,

## Estuary Education on the Web

Whether you are a formal educator or a parent looking for an interesting way for your child to spend a rainy afternoon, estuary education is only a click away. A wealth of water and estuary education is available on-line, ranging from formal experiments to simple science fun. Here are a few you might want to check out:

### Exploring Estuaries

[www.epa.gov/owow/estuaries/kids](http://www.epa.gov/owow/estuaries/kids)

An excellent estuarine education site tailored to the elementary audience. The site includes a basic explanation of estuaries and the problems they face. It hosts virtual tours of the Long Island Sound and Barataria-Terrebonne estuary. There are also games and activities including a coloring book, estuary mystery activity and marine creature identification game. An additional page is under construction which will have access to a variety of teacher's resources.

### The Water Sourcebooks

[www.epa.gov/safewater/kids/wsb](http://www.epa.gov/safewater/kids/wsb)

A comprehensive water education series. The Sourcebooks contain 324 activities broken down by grade level and topic. Each activity contains hands-on investigations supplemented by fact sheets, reference materials and a glossary of terms.

### Estuary-Net Project

<http://inlet.geol.sc.edu/estnet.html>

Estuary-Net was developed by the National Estuarine Research Reserve System in response to water quality issues arising in coastal areas. This project strives to develop collaborations among high schools, community volunteer water quality monitoring groups, local officials, state Coastal Zone Management (CZM) programs and National Estuarine Research Reserves (NERRS) to solve non-point source pollution problems in estuaries and their watersheds.

the wealth of plant and animal life found in estuarine environments far surpasses those found almost anywhere else. Environmental problems affecting our coastal resources mimic those that affect many of our valuable natural resources. All of these aspects combine to make estuaries an invaluable teaching resource.

### Teacher's Guide Release

Currently, HEP is in the process of updating, expanding and improving its Teacher's Guide to Water Education Resources, which will be titled Exploring Estuary Education: A Teacher's Guide to Lessons, Activities and Field Trips in the Harbor Estuary. Due for release in the September, the new teacher's guide will include an updated directory of organizations, including several new additions, that offer estuary-related programs, field trips, workshops or printed materials.

The new guide will also be expanded to feature a new section dedicated to materials that teachers can use directly in their classrooms. This section will contain teacher and student fact sheets, maps of the local estuary, estuary vocabulary, descriptions of native wildlife, a list of relevant internet resources and numerous sample lessons and classroom activities provided by local organizations. We hope this section will encourage teachers to include estuary education in their lessons, as well as highlight local organizations that have curriculum materials available. Our first teacher's guide received a terrific response from local educators and we are sure that the new, expanded edition will be equally well received.

If you are interested in receiving a copy of Exploring Estuary Education: A Teacher's Guide to Lessons, Activities and Field Trips in the Harbor Estuary as soon as it is available, please call 212-637-3816 or send e-mail to [info@harborestuary.org](mailto:info@harborestuary.org). ❖

*Kate Johnson, EPA Intern, has been working to update and expand the Harbor Estuary Program's teacher's guide this summer.*

# SEPTEMBER 27 is NATIONAL ESTUARIES DAY!

To find out how you can celebrate Estuaries Day in the NY-NJ Harbor Estuary, please see our calendar of events on pages 4 & 5.

## [www.estuaries.gov](http://www.estuaries.gov)

National Estuaries Day is an interagency campaign to celebrate the importance of estuaries and the need to protect them. Local communities across the country celebrate their estuaries with a variety of special events, most of them hosted by NOAA's National Estuarine Research Reserves and EPA's National Estuary Programs.

## [www.EstuaryLive.org](http://www.EstuaryLive.org)

For the last couple of years, EstuaryLive has been the featured event for National Estuaries Day. EstuaryLive 2003, scheduled for September 25 & 26, offers students in classrooms and other audiences around the world the opportunity to take a live and interactive tour through eight of our nation's estuaries. Nearly a million people celebrated National Estuaries Day in 2002, and most of them did so over the Internet.

## [www.WhatsAnEstuary.com](http://www.WhatsAnEstuary.com)

The nation-wide goal of the "What's An Estuary? Now You Know." campaign is to make "estuary" an everyday household word, like "river" and "ocean", by 2005. The campaign is being designed to be seen by millions across the country and to involve a critical mass of individuals, organizations and businesses to create public awareness about what an estuary is and why it's important to protect. The initial campaign kick-off will be National Estuaries Day, September 27. Visit [WhatsAnEstuary.com](http://WhatsAnEstuary.com) to view the 8-minute multimedia presentation.

# NATIONAL ESTUARIES DAY

**1** September 13, 10 am – 2 pm

## RIBBON CUTTING AT GATEWAY GREENHOUSE EDUCATION CENTER AND WALK AROUND JAMAICA BAY ESTUARY

Celebrate National Estuaries Day with a five-mile walk for health along the bay through estuary waterfront communities and parks. The walk ends at the new Gateway Greenhouse Education Center at Floyd Bennett Field. A second group of people will assemble at the Greenhouse to plant trees, pot plants, and help with winterizing and general maintenance at the Nursery Center. The event concludes with both groups joining a formal ribbon cutting ceremony for the Gateway Greenhouse Education Center. Call 212-352-9330 or visit [www.walkny.org](http://www.walkny.org).

**2** September 20, 10 am – 3 pm

## ELIZABETH ESTUARY DAY 2003

Join Future City, Inc. at the Elizabeth Marina for a celebration of our local estuary, the Elizabeth River and the Arthur Kill. Elizabeth Estuary Day will be a family day for multilingual information, education and celebration. Events will include interactive environmental educational opportunities, presentations, environmental boat rides and live underwater videos and pictures performed by the Urban Divers. Call 908-659-0689 or e-mail [Estuaryday2003@yahoo.com](mailto:Estuaryday2003@yahoo.com).

**3** September 20, 11 am – 6 pm

## CLEARWATER AT THE YONKERS RIVERFEST

The Clearwater will be a proud part of the 2003 RiverFest at the new Yonkers waterfront. Free dockside tours of the 100-foot Clearwater will include everything you ever wanted to know about “sloops” as well as a look at live Hudson River creatures and ecology. We’ll also have public sail programs so you can help raise the 3000-pound mainsail and see Yonkers and the Palisades from the magnificent river. Call 845-454-7673 or visit [www.clearwater.org](http://www.clearwater.org)

**4** September 20, 12 noon – 6 pm

## HACKENSACK RIVER DAY

Come to Foschini Park to rejoice in the history, recreation and camaraderie of the Hackensack River and the communities that grew up around it. Enjoy canoeing, fishing, musical entertainment, live animals, food, games, crafts, and environmental speakers and displays. Call 201-968-0808 or visit [www.hackensackriverkeeper.org](http://www.hackensackriverkeeper.org)

**5** September 20, 10 am – 3 pm

## PASSAIC RIVER ESTUARY BUS TOUR

A bus tour of the Passaic River Estuary, from Newark to Paterson and back again, will highlight the history, industry, scenic areas and natural resources of this important riverway and demonstrate how the River is being remediated

and restored after many years of neglect. Stops along the way may include restoration and remediation sites, waterfront parks, museums, boat clubs, Dundee Dam, and Great Falls. Advance registration required (\$10 for gourmet lunch). Call 908-766-7550 or visit [www.passaicriver.org](http://www.passaicriver.org).

September 20

## LIFE'S A BEACH!

Volunteer for the New York State Beach Cleanup at a beach near you. Collect and record the debris around your favorite estuary, river, bay, sound, lake or ocean. This event is coordinated by the American Littoral Society as part of the International Coastal Cleanup. Call 718-471-2166 or visit [www.alsnyc.org](http://www.alsnyc.org).

**6** September 20 & 21, 1 pm – 4:30 pm

## HUDSON RIVER WEEKEND

Wave Hill presents a “Hudson River Weekend” of activities and events that invite adults and children alike to take a closer look at the ecology and geology of the Hudson River Estuary. Through an art exhibition, landforms information station, family art and movement program, and a volunteer opportunity on the banks of the Hudson, visitors are invited to make new connections to this natural resource. Events will take place on Wave Hill’s grounds overlooking the Hudson River and Palisades range. Call 718-549-3200 or visit [www.wavehill.org](http://www.wavehill.org).

**7** September 23, 4 pm – 6 pm

## TEACHERS' OPEN HOUSE

Join us for the Second Annual Teachers' Open House as we celebrate the week of National



# CALENDAR OF EVENTS - 2003

Estuaries Day. Participants will meet teachers, environmental educators, and students involved in a Marine Biology Internship Program; take a tour of the 'Estuarium' and learn about local fish and invertebrates; gather a wealth of estuary materials for the classroom; and learn about seminars, field trips, internships, and teacher workshops. New teacher professional development hours awarded. Refreshments will be served. Call 212-233-3030 or visit [www.riverproject.org](http://www.riverproject.org).

**8** September 27, 11 am – 5 pm

## ECO-CRUISES: DISCOVER BROOKLYN'S GOWANUS CANAL AND NEWTOWN CREEK

Join the Urban Divers aboard their monitoring vessels, CleanWater NYC and The Gowanus Monitor II, for special guided eco-cruises of the Gowanus Canal and Newtown Creek. Cruises will be approximately 1 ½ hours and will include water sampling, fish monitoring and a live underwater video transmission to view what's living at the bottom of the estuary. Call 718-802-9874 or visit [www.urbandivers.org](http://www.urbandivers.org).

**8** September 27, 9 am & 10:45

## GOWANUS CANAL BOAT TOUR

Join the Brooklyn Center for the Urban Environment for a 1 ½ hour boat tour focusing on the history and ecology of the Gowanus Canal. At various stages throughout the tour, science educators will explain how the Gowanus is an intricate and human-influenced estuarine ecosystem - a crucial transition zone between land and water that provides an environment for lessons in biology, geology, chemistry, physics, history and social issues. Advance registration required. Call 718-788-8500 x208 or visit [www.bcue.org](http://www.bcue.org).

**8** September 27, 12 noon – 5 pm

## GOWANUS CANAL DAY: A CELEBRATION OF NATURE RETURNED

Visit the Gowanus Canal for a festival featuring an afternoon of fun, community education and a shared celebration of the rebirth of the Canal. The Festival will include walking tours, local history exhibits, displays of canal critters, local art, vendors, entertainment and education about how a cleaner canal now attracts fish, birds and other wildlife as well as recreational uses. Call 718-858-0557 or visit [www.gowanus.org](http://www.gowanus.org).

**9** September 27 10 am – 2 pm

## ESTUARY ALIVE

Visit Liberty State Park for "Estuary Alive," a celebration of the NY-NJ Harbor Estuary. The event will include interpretive walks along the Hudson River Walkway focusing on the ecology of the estuary and cultural history of the area. Fish printing and sea life rubbing craft activities will be available children. The day's main event will be an Arm-of-the-Sea-Theater

production, "At the Turning of the Tide," about the Hudson River Estuary. Volunteers will also have the opportunity to participate in a beach clean-up. Call 201-915-3409 or e-mail [lspic@superlink.net](mailto:lspic@superlink.net).

**7** September 27, 10 am – 2 pm

## GO FISH

Join Master Anglers for free catch and release fishing at Wagner Park in Battery Park City as you learn about the marine life in today's Hudson River and NY-NJ Harbor. In addition to the fishing, there will be a musical performance by Lou Gallo and Brady Rymer, art projects related to the Hudson River, public education displays on the NY-NJ Harbor Estuary, Hudson River, pollution, solutions, and protection, as well as live fish, crabs and other marine life. Call 212-267-9700 or visit [www.batteryparkcityparks.org](http://www.batteryparkcityparks.org).

**7** September 27, 10 am, 1 pm & 4 pm

## SAIL AWAY ON ESTUARY DAY

South Street Seaport Museum celebrates Estuary Day with public educational sails aboard the 1885 schooner Pioneer. Take a 2-hour sail aboard the only American-built iron-hulled sailing vessel still in existence! See Upper New York Bay from the deck of the Pioneer while exploring the aquatic ecology of the estuary that made New York a premier port. There will be hands-on activities and educational materials for all ages. Pre-registration accepted by not required; space is limited (\$5). Call 212-748-8786 or visit [www.southstseaport.org](http://www.southstseaport.org).

**7** September 27 & 28, 1 pm – 4 pm

## ESTUARY DAY AT SOUTH STREET SEAPORT MUSEUM

South Street Seaport Museum's Family Programs welcomes visitors to a number of programs focusing on the unique features of estuarine life, maritime crafts and children's yoga inspired by the aquatic animals of the East River. Visitors will touch, play, examine, create and discover as they learn. All activities are free with Museum admission (\$5 for adults, children under 12 free). Reservations accepted for 1:00 children's yoga classes. Call 212-748-8758 or visit [www.southstseaport.org](http://www.southstseaport.org).

**1** September 28, 4:30 pm – 7:30 pm

## JAMAICA BAY ECOLOGY SUNSET CRUISE

Join the American Littoral Society and the Jamaica Bay Ecowatchers for a three-hour sunset cruise through the backwater marshes of Jamaica Bay. Learn about the history, ecology and wildlife of this great 13,000 acre urban estuary. The cruise passes close to the big marshes of the Jamaica Bay Wildlife Refuge where egrets, herons, ibis, osprey, peregrine falcon, waterfowl, oystercatchers and many other species stop during the peak fall migration

time. Wine & cheese will be served. Advance reservation required. Call 718-318-9344 or visit [www.alsnyc.org](http://www.alsnyc.org).

**10** September 28, 10 am – 3 pm

## EXPLORE YOUR ESTUARY

Celebrate National Estuaries Day with the Education Program at the NJ Marine Science Consortium. Your family will enjoy a full day of fun and educational activities focused on the beauty, wonder and importance of estuaries. You'll meet marine research scientists and participate in "hands-on" learning experiences. The day is also suitable for 4-H, Scout Groups and other informal groups. Advance registration required (\$10 for adults, \$8 for children, or call for group rates). Call 732-827-1300 x19 or visit [www.njmsc.org](http://www.njmsc.org).

**11** October 4, 10:30 am – 2:30 pm

## BROOKLYN WATERS AND WILDLIFE: EXPERIENCE THE HARBOR ESTUARY AT BROOKLYN BRIDGE PARK

Visit Brooklyn Bridge Park and Empire-Fulton Ferry State Park for a unique, up-close experience of the Harbor Estuary and East River. The Park's "Cove Between the Bridges" teems with wildlife and shows how this slice of nature can thrive in our urban landscape. On October 4th the Brooklyn Bridge Park Coalition will offer boat and walking tours, bird watching, fishing, and information about this hidden habitat - who calls it home and how we can help it flourish. Call 718-802-0603 or visit [www.bbpc.net](http://www.bbpc.net).

**12** October 4, 11 am – 3 pm

## FLOATING FARMERS MARKET AT RIVERBANK STATE PARK

Come enjoy free samples from New York's farms alongside an antique barge on the Hudson River! The NYC Soil and Water Conservation District is partnering with the Lower Hudson-Long Island Resource Conservation and Development Council to bring locally grown farm products to NYC. Come enjoy the water and support local farmers at this first-of-its-kind event. Call 212-637-3877 or e-mail [nina@nycswcd.net](mailto:nina@nycswcd.net).

**12** October 4, 11 am – 3 pm

## METRO WATERS TOUR

Climb aboard for more than just a boat tour! Join the Metropolitan Waterfront Alliance as we help connect the many exciting events planned for Estuaries Day! See how easy and fun it can be to travel by water and learn about new and ongoing efforts to revitalize the waterfront of our region. Call 800-364-9943 or visit [www.waterwire.net](http://www.waterwire.net).



## Big Egg Marsh Restoration

(from page 1)

not include the known losses from deliberate landfill and urbanization that took place along the bay's periphery. The disappearance of the marshes is alarming, primarily due to their multiple functions and values, which include, but are not limited to high biological productivity, diverse recreational opportunity, flood buffering capacity, aesthetics, and the ability to store carbon and sequester chemical contaminants.

In May 2001, a Blue Ribbon Panel of salt marsh specialists assembled by the NPS concluded that the likely causes of salt marsh loss include: decreased availability of sediments (due to paving, bulkheading, and dredging), sea level rise, erosion (due to waterfowl rooting, mosquito ditches, boat wakes, and subsidence), plant mortality (due to impeded drainage, chemical contaminants, pathogens, smothering from mats of straw and sea lettuce), and the isolation of the bay from sediments as a result of natural lengthening of the

adjacent barrier island. The panel suggested pilot projects involving research and trial salt marsh restoration. In response, the NPS developed a three-pronged approach to the problem: protection, restoration/investigation, and education. The Big Egg Marsh

pilot project will serve primarily as an investigative / restorative effort. In addition, a wayside educational component has also been incorporated to enhance public understanding and cooperation.

The restorative component of the project was designed, in part, to evaluate "thin-layering," a relatively recent method of sediment application for tidal marshes, as a means of re-establishing salt marsh vegetation and increasing the overall elevation



The intertidal creek where the dredging will occur for the Big Egg Marsh Restoration Pilot Project.

of the deteriorating marshes. In Big Egg Marsh, a thin layer of sediment will be applied via Jet-Spray method. This pressurized spray method provides an even distribution of sediment particles, thus reducing the turbidity that results from the loss of smaller particles that are more easily transported by the conventional sand slurry method. The two acres of thin layer spray applied to the marsh surface will vary from a few inches in depth near the marsh edge to a

maximum of several feet over the ditches and depressions in the marsh interior. The thicker, interior layer will form a ridge that will be up to 10 inches higher than the surrounding areas of lesser depths. The highest point on the ridge will be several inches below the lowest elevation of common reed (*Phragmites australis*), which grows at a nearby, off-site location.

The preferred alternative for minimizing ecological impacts during the



A self-propelled swing-ladder dredge with high-pressure spray nozzle, similar to the one that will be used in the Big Egg Marsh Restoration.

restoration process is to dredge sediment from the intertidal creek adjacent to the south and west sides of the treatment area of the marsh. The sediment, consisting of about 90% sand, will be extracted from the bottom of the intertidal creek bed. The dredging will form a 20-foot-wide, 6-foot-deep, and 300-yard-long trench. The approaches to both ends of the creek channel will not be dredged and will remain as intertidal mudflat.

The investigative component of the project includes pre-treatment inventory and monitoring. Pre-treatment inventory includes a soil invertebrate survey (qualitative and quantitative), aquatic macro-invertebrates, contaminant sampling, insects, spiders, fishes, birds, and mammals. In addition, soil samples were collected for pore-water analysis to compare the chemistry of bare soil with the soil of the remnant patches of smooth cordgrass. Monitoring the above-mentioned parameters will continue for at least 5 years as other, larger scaled projects are planned and implemented.

Results of the project will be used to guide future restoration efforts, which will also focus on enhancing deteriorated salt marsh ecosystems. The salt marshes are an integral and fundamental habitat type of Gateway's coastal ecosystem. It is among the most highly productive salt marshes in the Northeastern United States and recognized internationally as an Important Bird Area. The refuge supports critical feeding, resting, and nesting habitats for more than 300 species of migratory and resident birds observed to inhabit the bay. The intertidal and subtidal mudflats adjacent to the salt marshes support nurseries for fishes, marine invertebrates, and shellfish. ❖

**George Frame** is a Biologist in the Division of Natural Resources, Gateway National Recreation Area.



## Capt. Pete Says...

### Fish Tacos / Fish Fingers

**Peter L. Sattler**

**F**ish on!! Every type of fish is in season and the bite is on! Striped bass, fluke and weakfish are running; and these fish are big. Small bluefish are stealing the bait, but I target the aforementioned game fish for their delicious taste. This fun meal involves preparing those big fillets into small, manageable bites. With this recipe, it's alright to be like George Costanza: Double Dip!!

#### **Fish Tacos:**

- 3/4 C Flour
- 1/4 C Capt Pete's Spice Mix\*
- 12 Oz. Beer, Mexican preferred
- 2 C Flour or Wondra Oil for frying
- 3/4 lb Fish fillets cut into ~4" x 1/2" strips
- 2 Cloves of garlic
- 8 Tortillas, burrito size
- 1 C Salsa

\* Equal parts of paprika, cayenne, salt, black pepper, garlic powder, chile powder, oregano.

#### **Avocado Tartar Sauce:**

- 2 Avocados, ripe
- 1/4 C tartar sauce
- 1 Tbsp lime juice



Striped Bass

Puree avocados, stir in tartar sauce and lime juice; chill.

Combine flour and spice mix. Dredge fish (First Dip) and set aside.

At the same time that the oil is heating (add garlic cloves), mix Wondra in the beer; make sure its not the one you're drinking. As soon as the oil is ready (cloves will be brown--remove & discard), dredge fish in beer batter (Double Dip) and place in pan with room for the strips to swim. Turn once when golden brown and place on paper towels to drain. Continue until all fish strips are cooked; dispose of oil properly.

Heat tortillas - fill with fish, salsa, tartar sauce - roll - enjoy!

For an appetizer of Fish Fingers, skip the tortillas and serve the tartar sauce on the side.

Beverage of choice: Corona or Dos Equis or Modelo Negra, served ice cold.

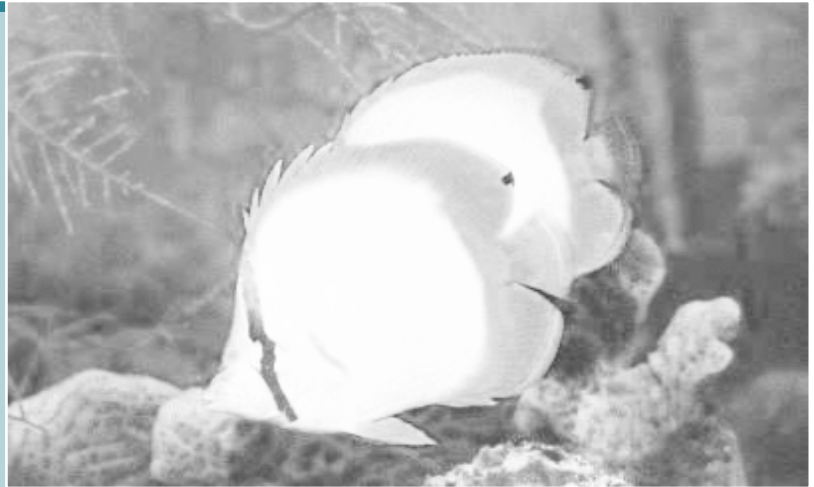
**Peter L. Sattler** is Principal Environmental Planner with the Interstate Environmental Commission.

# Butterflyfish

## and Other Tropical Fish Visitors

**John Waldman, Hudson River Foundation**

**D**uring summer and early autumn, the mostly drab-colored temperate fishes that dwell around the piers of New York Harbor mix with bright yellow visitors from down south: butterflyfish. These southerners appear perfectly capable of feeding and growing in the waters of the NY-NJ Harbor Estuary despite occurring many hundreds of miles north of the normal range of their adults. Most of the butterflyfish observed in the area are spotfin butterflyfish; however, foureye butterflyfish have also been caught.



The tropical fishes seen in the Harbor system occur there as a result of the surprisingly large masses of eggs and larvae of southern species that are carried to higher latitudes by the Gulf Stream each spring and summer. As the Gulf Stream curves northeastward, warm-core eddies spin off the main flow toward Long Island like storm systems, depositing these early life stages in large numbers in the island's south shore bays. If you pull a seine net through the shallows of Shinnecock Bay in late summer, you will catch a remarkable array of juvenile fishes more often associated with the Bahamas. The Harbor Estuary doesn't receive nearly as many of these expatriates, but noticeable numbers do occur there.

Butterflyfish will enter killifish traps baited with sardines and suspended off Manhattan piers—the River Project has taken them at Pier 26. But many tropicals also show up around the estuary in beach seines deployed for monitoring or educational purposes. Almost all are young-of-the-year because the eggs and larvae that produce them are the life stages least resistant to passive dispersal by currents. Other exotics that have been seen in the harbor and lower Hudson include ladyfish, bonefish, bluespotted cornetfish, gag grouper, short bigeye, moonfish, lookdown, permit, gray snapper, spotfin mojarra, pigfish, scrawled cowfish, and orange and planehead filefish. Given that the Harbor is a large, well-sampled estuarine system, new species additions seem to occur every year or two.

Alas, some of these tropicals may be out of their league. Divers have seen members of the slower swimming species dying after autumn cold snaps. ❖

*John Waldman, Senior Scientist with the Hudson River Foundation, also wrote about this phenomenon in his recent books: Heartbeats in the Muck and The Dance of the Flying Gurnards.*

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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New York - New Jersey  
Harbor Estuary Program

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