

**Harbor Herons, Cormorants, and More
Current Research and Future Planning**

*Proceedings of the Greater New York/New Jersey Harbor Colonial
Waterbirds Working Group*

**Staten Island, New York
27 - 28 November 2007**



Proceedings of the Greater New York/New Jersey Harbor Colonial Waterbirds Working Group

**November 27 – November 28, 2007
Education Center, Third Floor
Fort Wadsworth, Staten Island, New York**

**Organized by:
Wildlife Trust's New York Bioscape Initiative
New York City Audubon
National Park Service, Gateway National Recreation Area, Jamaica Bay Institute
Harbor Herons Subcommittee of the NY-NJ Harbor Estuary Program**

**Hosted by:
National Park Service, Gateway National Recreation Area, Jamaica Bay Institute**

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**Meeting booklet compiled by:
Susan Elbin and Elizabeth Craig, New York Bioscape Initiative, Wildlife Trust**

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Meeting Agenda
Tuesday, 27 November

- 9:00-9:30** **Sign In, Coffee**
- 9:30-9:45 Welcome and Introduction
Susan Elbin, Wildlife Trust
Kim Tripp and Nancy Khan, National Park Service
- 9:45-11:50** **Double-crested Cormorants (*Phalacrocorax auritus*)**
- 9:45-10:05 Status of Double-crested Cormorants in New York Harbor, 2007
Susan Elbin, Wildlife Trust
- 10:05 -10:25 Diet Analysis of Double-crested Cormorants in New York Harbor
Colin Grubel, Queens College
- 10:25-10:45 Impacts of Double-crested Cormorants on New York Harbor: Arthropods and Vegetation
Liz Craig, Wildlife Trust
- 10:45-11:05 The Plant Ecology of New York Harbor Islands: Impacts of Colonial Waterbirds and Restoration Targets
Matt Palmer, Columbia University
- 11:05-11:20** **Break**
- 11:20-11:40 Using Flightlines to Assess Feeding Locations of Double-crested Cormorants on Lake Ontario
Chip Weseloh, Canadian Wildlife Service
- 11:40-11:50 Pilot Study: Observing Cormorant Flightlines in New York Harbor
Colin Grubel, Queens College
- 11:50-1:50** **Health**
- 11:50-12:10 Non-invasive Health Monitoring Methods of a Biondicator Species - the Double-crested Cormorant in New York Harbor
Kate Ruskin, Columbia University
- 12:10-12:30 Contaminant Levels in Birds Breeding in the Hackensack Meadowlands
Nellie Tsipoura, New Jersey Audubon
- 12:30-1:30** **Lunch**
- 1:30-1:50 Prevalence of Botulism in Bird Colonies on Lake Ontario
Chip Weseloh, Canadian Wildlife Service
- 1:50-2:30** **Human Dimensions**
- 1:50-2:10 Birds Strikes at JFK Airport
Laura Francoer, Port Authority of New York and New Jersey

- 2:10-2:30 Work at DEP Landfills in Brooklyn
Saleen Tennis, United States Department of Agriculture
- 2:30-3:25 Natural Resource Updates**
- 2:30-2:50 **Update on Saltmarsh Island Restoration in Gateway National Recreation Area**
George Frame, National Parks Services
- 2:50-3:10 Update on New York City Parks Projects in the Harbor.
Bill Tai, New York City Parks and Recreation
- 3:10-3:25 Update on Herons, Cormorants, and Other Concerns in the Jamaica Bay Area
Don Riepe, The American Littoral Society
- 3:25-3:40 Break**
- 3:40-4:25 Conservation Work in the Greater Region**
- 3:40-4:00 Great Captains Island: Important Bird Area Conservation Plan – a Plan of Action
Stephanie Schmidt, Manomet Center for Conservation Sciences
- 4:00-4:20 Updates on Projects from Up North (NY)
Dave Adams, New York State Department of Environmental Conservation
- 4:20-4:40 Update on SEANET in the NY Bioscape, 2007.
Christine Banks, Wildlife Trust
- 4:40-5:00 Wrap-up and Discussion

Wednesday, 28 November

- 9:00-9:30 Sign In, Coffee**
- 9:30-12:20 Harbor Herons and Other Colonials in the Greater Harbor**
- 9:30-9:45 Welcome and Introduction
Susan Elbin, Wildlife Trust
Kim Tripp, National Park Service
- 9:45-10:05 Green Harbor Task Force
Roland Lewis, President and CEO, Metropolitan Waterfront Alliance
- 10:05-10:20 Introduction to the Meeting and Harbor Heron Business
Susan Elbin, Wildlife Trust
- 10:20-10:40 New York City Audubon's Harbor Herons Survey: Wading Bird, Cormorant, and Gull Nesting Activity in 2007
Andy Bernick, AKRF and New York City Audubon

- 10:40-11:00 **Goose and Huckleberry Islands, 2007**
David Künstler, New York City Parks and Recreation
- 11:20-11:40 **Report on New York City Audubon Projects**
Glenn Phillips, New York City Audubon
- 11:40-12:00 **Update on Yellow-crowned Night-Herons in Secaucus, New Jersey**
Hugh Carola, Hackensack Riverkeeper
- 12:00-12:20 **The Landscape Project and Data Sharing in New York and New Jersey, 2007**
Christina Kiesel, New Jersey Division of Fish and Wildlife – Endangered and Nongame Species Program
- 12:20-1:20 Lunch**
- 1:20-1:40 **Piping Plover Status Report**
Kim Tripp, National Park Service
- 1:40-4:00 Resources, Restoration and Related Issues**
- 1:40-2:00 **Use of Artificial Eelgrass Mats by Saltmarsh-Nesting Common Terns**
Brian Palestis, Wagner College
- 2:00-2:20 **Raccoons - Predators of Turtles and Birds**
Russ Burke, Hofstra University
- 2:20-2:40 **LightHawk: Flight Resource and Conservation Partner**
Kelley Tucker, LightHawk
- 2:40 – 3:00 Break**
- 3:00-3:20 **Update on North and South Brother Islands**
Mike Feller, New York City Parks and Recreation
- 3:20-3:40 **Conservation in the Arthur Kill Watershed**
Richard Lynch, Sweetbay Magnolia Conservancy
- 3:40-4:00 **The State Wildlife Grant (SWG) Process**
Jason Smith, New York State Department of Environmental Conservation
- 4:00-4:20 **Roundtable Discussion, including Update on Asian Longhorned Beetle Meeting**
- 4:20-4:30 **Wrap-up and Next Steps**
Susan Elbin, Wildlife Trust



Meeting Venue: Fort Wadsworth
National Park Service: The Historic Resources of the Staten Island Unit

A view from Fort Wadsworth - across the Hudson River, under the Verrazano Bridge

Staten Island, an eclectic mosaic of the American culture, contains a record of some of the most important events in American history. The first European to leave a record of his exploration of the entrance to New York Harbor was Giovanni da Verrazano, who in 1527 sailed into the stretch of water known as the Narrows, the location of the present-day Fort Wadsworth. Henry Hudson, 85 years later, explored the river beyond the Narrows and named Staten Island. The US Congress created Gateway National Recreation Area in 1972 and, today, the National Park Service cares for Fort Wadsworth, Miller Field and Great Kills Park on Staten Island.

For further historical information, and opportunities for self-led, ranger-led, and field trips, contact Fort Wadsworth's Visitor Center at 718-354-4500.

Reprinted from the National Park Service Website
http://www.nps.gov/archive/gate/siu/siu_history.htm

Directions to Fort Wadsworth, (718) 354-4500

By car:

- From the Verrazano Narrows Bridge from Brooklyn: after toll, take the Bay Street exit to the Park entrance.
- From the Staten Island Expressway (Rt. 278) east to the Bay Street exit. Turn left at the light and follow this road to Bay Street and the Park entrance.

By bus:

- S51 from Staten Island Ferry Terminal to the Park entrance on Bay Street.



New York – New Jersey Harbor Estuary Program

www.harborestuary.org

The New York – New Jersey Harbor Estuary Program

The New York-New Jersey Harbor Estuary Program (HEP) was established under the federal Clean Water Act and is a partnership of federal, state, and local environmental agencies, scientists, and citizens working to protect and restore the natural resources of the NY-NJ Harbor Estuary. The Harbor Estuary is both a dynamic living ecosystem and a center of human activity. The goal of the program is to establish and maintain a healthy and productive harbor ecosystem with full beneficial uses.

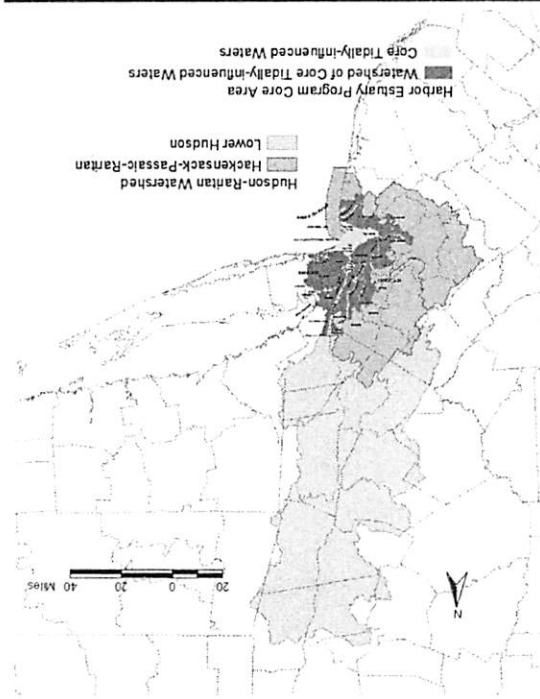
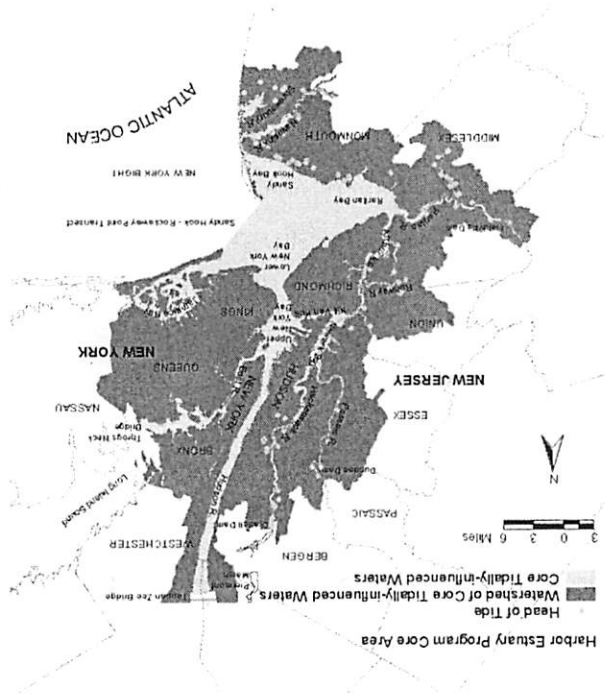
Geographic Location

The NY-NJ Harbor Estuary encompasses the waters of NY Harbor and the tidally influenced portions of all rivers and streams flowing into it. The “core area” of the Harbor Estuary Program extends from Piermont Marsh on the Hudson River to an imaginary line at the mouth of the Harbor connecting Sandy Hook, New Jersey and Rockaway Point, New York (the Sandy Hook-Rockaway Point Transect). The core area includes the bi-state waters of the Hudson River, Upper and Lower Bays, Arthur Kill, Kill van Kull, and Raritan Bay. In New York, it includes the East and Harlem Rivers and Jamaica Bay, and in New Jersey, it includes the Hackensack, Passaic, Raritan, Shrewsbury, Navesink, and Rahway Rivers, and Newark and Sandy Hook Bays.

Planning and Activities

A Comprehensive Conservation and Management Plan (CCMP) for the Estuary was completed in 1996 and signed by the Governors of NY and NJ, and the EPA Administrator in 1997. The CCMP identifies eight areas of concern: habitat and living resources; toxics; dredged material management; pathogens; floatables; nutrients and organic enrichment; rainfall-induced discharges; and public involvement and education.

The program is overseen by a Policy and Management committee structure and technical activities are undertaken by a number of work groups, including nutrients, pathogens, toxics, habitat, regional sediment management, and public access. Major initiatives include the assessment of water quality and the development of plans to meet standards, assessment of the major needs for ecosystem restoration, and assessing regional sediment management needs.



Maps of the Harbor Estuary Program's watershed (top) and core areas (bottom).

Abstracts

(Arranged in alphabetical order by presenter's last name)

Updates on Projects from Up North (NY)

Dave Adams¹, Kevin P. Kenow², and Nina Schoch³. ¹New York State Department of Environmental Conservation, Albany, New York, ²U. S. Geological Survey, La Crosse, Wisconsin, ³Adirondack Cooperative Loon Program and the Wildlife Conservation Society, Ray Brook, New York. Djadams@gw.dec.state.ny.us.

Migration Patterns and Wintering Range of Common Loons Breeding in New York State.

Objectives of Research: The Common Loon (*Gavia immer*) is listed as a species of Special Concern in New York State. Current management of this species is focused on determining the status of the breeding population in New York, primarily in the Adirondack Park region. However, little is known about where these birds spend their non-breeding periods, a time that is vital to their productivity and survival. The goal of this study was to help identify important Common Loon migration and wintering areas where habitat conservation should be considered. Specific objectives were to: (1) Determine migration routes, chronology and wintering areas of adult Common Loons that breed in New York; (2) Document year-round locations and movements of subadult (<2 year old) Common Loons hatched in New York; and (3) Identify possible threats to New York breeding Common Loon during migration, winter and other non-breeding periods.

Summary of Results and Accomplishments: A collaborative satellite telemetry study was conducted to determine the precise migration patterns and wintering locations of birds of the Adirondack Park population. Satellite transmitters were implanted in 10 Common Loons (nine adults and one juvenile) that were captured on breeding lakes in New York in summers 2003 ($n = 2$), 2004 ($n = 6$), and 2005 ($n = 2$). Transmitters on six of the birds provided adequate location data to document movement to wintering areas. Usually, the adult birds appeared to travel non-stop from breeding lakes, or neighboring lakes (within 15 km), to the Atlantic Coast. Adult loons marked in the Adirondack Park of New York wintered along the coasts of Massachusetts (414 km from breeding lake), Rhode Island (362 km), and southern New Jersey (527 km). Size of individual wintering areas of adult loons ranged from 53 to 2,714 km², based on a 95% fixed kernel utilization distribution probability. A radiomarked juvenile bird made a number of stops at lakes and reservoirs en route to Long Island Sound. Maximum functional life of transmitters was about 12 months, providing an opportunity to document spring migration movements as well. This work provides essential information on the migration patterns, staging areas, and wintering sites of Adirondack loons that is required by resource managers for development and implementation of regional Common Loon conservation strategies. Movement data of selected loons was served on a web site established to provide project information to partners and the public at www.umesc.usgs.gov/terrestrial/migratory_birds/loons/migrations.html. (Excerpted from final project report submitted, for partial funding, to the Natural History Museum of the Adirondacks by USGS, Dec. 2006).

New York State Waterbird Program and Related Efforts.

Colonial Waterbird - Several active breeding colonies within NYS are located within the Niagara Frontier, Eastern Lake Ontario, Oneida Lake, the St. Lawrence River and along the

Atlantic Coast. The primary species found throughout the Great Lakes are Black Tern, Common Tern, Caspian Tern, Great Egret, Great Blue Heron, Black-crowned Night-Heron, Double-crested Cormorant, Ring-billed gull and Herring Gull. Many of these are species of conservation concern, several are listed as endangered or threatened by either the US FWS and/or NYS. Along the Atlantic Coast Great Egret, Snowy Egret, Cattle Egret, Glossy Ibis, Tricolored Heron, Great Blue Heron, Black-crowned Night-Heron and Yellow-crowned Night-Heron can be found nesting in mixed rookeries. Common Tern, Least Tern, Roseate Tern, Laughing Gull, Herring Gull and Ring-billed nest on the beaches, islands and marshes found along the Long Island and NYC shoreline. Monitoring of Sandhill Crane and Whooping Crane activity is needed.

The primary working groups coordinating monitoring for these resources are the Great Lakes Colonial Waterbird Working Group, which meets annually in October, and the New England Long Island Colonial Waterbird Working Group, which meets in December each year. In addition, the Harbor Herons Program hosts an annual meeting in November to discuss and coordinate efforts in the NYC region. A decadal census of colonial waterbirds throughout the Great Lakes, coordinated by US FWS, is underway 2007-09. USDA staff coordinate an annual Laughing Gull census at the Gateway national Recreation Area each year. DEC staff in Stony Brook coordinate the annual Piping Plover and Colonial Waterbird Survey. Plover and terns are surveyed each year, with wading birds and gulls are surveys every three years. DEC staff in Watertown coordinate a census of all historical Black Tern breeding wetlands every three years. Reference resources include the Upper Mississippi/ Great Lakes Waterbird Plan and the Mid-Atlantic New England Waterbird Plan.

Coastal development pressure is severe, availability of suitable habitat is key. Significant habitat management is required to maintain positive productivity at active Common Tern nesting colonies with the Great Lakes region, i.e. gravel fill, perimeter fencing, and gull exclusion guide wires. Similarly, agency staff and partners expend considerable resources annually to protect and manage Atlantic Coast Piping Plover and Least Tern breeding sites, i.e. beach stewards, symbolic fencing, and nest predator enclosures. A status assessment and conservation plan for populations of Common Tern along the Great Lakes is in progress to establish population goals, standardizes monitoring procedures, and identify habitat improvements to make management more cost-effective. A research effort, in collaboration with SUNY ESF, is in progress to evaluate coastal wetland habitat changes along the shores of Lake Ontario resulting from the construction of the Robert Moses Dam. Double-crested Cormorants and gulls are managed in the Great Lakes region to minimize impacts to public resources, wildlife habitat and other co-occurring waterbird species. Movement patterns and migration routes poorly documented.

Marsh Birds - High quality wetland habitats, particularly emergent marsh, continue to be in decline. New York State has lost over half of its original pre-colonial wetland resources. In 2004, the NYS DEC initiated a three-year project to assess marsh bird abundance and distribution throughout NYS. Surveys were conducted in NYS freshwater emergent marshes during May and June 2004, 2005 and 2006. All sites were surveyed three times according to the Standardized North American Marsh Bird Monitoring Protocol. We detected 448 Virginia Rails at 46 sites; 168 American Bitterns at 29 sites; 136 Pied-billed Grebes at 15 sites; 56 Soras at 12 sites; 32 Least Bitterns at 50 sites; and 0 King Rails. This research was statewide in scope, with a focus on large state-owned marshes throughout New York State. Efforts are underway, within the Northeast Coordinated Bird Monitoring initiative, to develop a Northeast Marsh Bird

Monitoring Project to document the distribution, abundance and trends of these poorly understood wetland dependant species. Such information is critical to responsible management as several of these focal species are currently hunted. As a primary participant in the initiative, New York State will be piloting a statewide freshwater monitoring project in 2008. US FWS and USGS staff will be providing a sampling framework and guidance for the development of a statistically robust monitoring project. During spring 2008 a statewide training workshop will be held to provide interested staff and volunteers the required protocols and equipment needed to carry out field work.

Invasive Species - Invasive purple loosestrife and Phragmites, when established in large monotypic stands, can degrade wildlife habitat and negatively impact breeding success of wetland dependant birds. Biological control agents for purple loosestrife have been released in NYS since 1992. Each spring, DEC staff at Tonawanda and Northern Montezuma collect and distribute leaf-eating beetles to interested parties. New releases should be considered for sites considered important for wildlife of conservation concern that containing significant stands of this exotic plant. WMAs should be surveyed regularly.

Disease and Contaminants - The first observed outbreak of type E botulism occurred in the eastern basin of Lake Erie in November 2000. To monitor and evaluate the impact of type E botulism on waterbirds, thirteen 500-meter transects were surveyed along the Lake Erie shoreline. This survey has been repeated annually in the fall from 2001 through 2006. Forty-seven transects were monitored during the peak of Common Loon migration, mid-October through November, and predicted mortality for the Lake Erie shoreline was calculated. During 2000 through 2006 an estimated 41,198 waterbirds died from type E botulism. Waterbird mortality was first documented on Lake Ontario during 2002. From 2002 through 2006, surveys were conducted along the Lake Ontario shoreline. Predicted waterbird mortality on Lake Ontario for this period was estimated to be 10,394. Species most severely impacted varied from year to year with Red-breasted Merganser mortality estimated at 2,479 in 2000; Common Loon at 1,149 in 2001; Long-tailed Duck at 13,291 in 2002; Common Loon at 2,101 in 2003, 2,915 in 2004, 1,808 in 2005, and 7,878 in 2006. During 2006 and 2007 significant type E botulism related waterbird mortality was documented on Little Galloo Island in Lake Ontario during late July and early August. Over 800 Caspian Tern were affected in 2006 and more than 250 were affected in 2007. Other species affected included Ring-billed Gull, Herring Gull, Great Black-backed Gull, Double-crested Cormorant, Canada Goose, Semi-palmated Sandpiper. SeaNet monitors coastal beaches for new incidents via a volunteer network.

While contaminant levels in colonial waterbirds along the Great Lakes have shown a decline over the past 30 years, specific regions or Areas Of Concern continue to be problematic. In addition, elevated levels of mercury and other environmental contaminants have been documented recently in birds breeding on high elevation lakes and mountains. Colonial waterbirds nesting in the NY Harbor have been shown to have increased parasite loads resulting in higher morbidity in addition to the typical morphological and behavior changes. Improved surveillance monitoring is needed throughout NYS.

Bird Conservation Areas - New York's Bird Conservation Area Program protects bird populations and their habitats by integrating bird conservation into agency planning, management, and research. Bird Conservation Areas (BCAs) are state-owned lands and waters designated to safeguard and enhance birds in New York. To date, 49 BCAs have been designated in New York. BCAs are designated because they support one or more of the following: 1) An unusually high diversity of bird species, 2) Large concentrations of one or

more bird species, 3) Endangered, threatened, or rare bird species, 3) An exceptional or rare bird habitat. Preparations for additional designations are in progress.

Update on SEANET in the NY Bioscape, 2007

Christine Banks. Wildlife Trust. Banks@wildlifetrust.org.

The Seabird Ecological Assessment Network (SEANET), lead by Tufts University, has been active in NY, NJ, and CT for nearly 4 years via Wildlife Trust's program coordination in this area. SEANET aims to collect baseline mortality data and increase early detection of threats to seabirds. Volunteers walk designated stretches of beach twice a month and collected beached bird and other data, including conditions, live birds and horseshoe crabs present, and the amount of human generated wrack. An online data entry portal and mapping application was launched last year through the National Biological Information Infrastructure's (NBII) Wildlife Disease node. This has facilitated volunteer involvement and allowed for better identification of trends over space and time. In an effort to gather more information on seabird mortality, Wildlife Trust is reaching out to veterinarians and avian rehabilitators who would bring another aspect of data collection to the program. Thus Wildlife Trust is conducting its first workshop on "Emerging Diseases and Other Health Issues in Avian Populations" in early December 2007 in hopes of involving this community in data gathering.

New York City Audubon's Harbor Herons Survey: Wading Bird, Cormorant, and Gull Nesting Activity in 2007

Andy Bernick. AKRF and New York City Audubon. Abernick@akrf.com.

New York City Audubon's Harbor Herons Project Nesting Survey of New York/New Jersey Harbor and surrounding waterways was conducted from 17 May through 3 June 2007. A total of 1,846 nests of nine species of wading birds (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Yellow-crowned Night-Heron, Little Blue Heron, Tricolored Heron, Cattle Egret, and Green Heron) were located on ten islands; 26 pairs of Yellow-crowned Night-Herons were noted at one mainland colony in Far Rockaway. South Brother Island was the largest wading bird colony in 2007 (592 nests). Black-crowned Night-Herons were the numerically dominant nesting species throughout the study area (802 nests on nine islands). Since 2004, nesting of Great and Snowy egrets has increased in NY/NJ Harbor, while Glossy Ibis and Black-crowned Night-Heron nesting has declined. No active wading bird nests were found within the Arthur Kill and Kill Van Kull; suitable nesting habitat at Prall's Island was removed to control an Asian Longhorned Beetle population discovered on the island in March 2007. In the East River, few Black-crowned Night-Herons nested on North Brother Island. Continued declines for wading birds, cormorants and gulls were observed on Huckleberry Island. Wading birds nested in over 15 species of trees, shrubs, and vines. Double-crested Cormorants nested on or near seven islands (1,046 nests total), including a new colony discovered in July on Elders Point West in Jamaica Bay. Herring and Great Black-backed gulls nested on islands throughout the harbor (2,656 and 796 nests, respectively) and nesting Common Terns (8 nests) were found at Little Egg Marsh.

Raccoons – Predators of Turtles and Birds

Russ Burke. Hofstra University. Russell.L.Burke@hofstra.edu.

Raccoons are important predators of the nests of turtles and ground-nesting birds. At Jamaica Bay Wildlife Refuge, raccoons predate >90% of all terrapin nests and also kill some nesting females. Raccoon numbers have increased greatly since O'Connell's surveys in the 1970s. More than 100 individual raccoons currently live in JBWR, and they regularly cross the refuge, indicating that they do not defend territories. Typical body sizes are large, and reproductive rates are high. These characteristics are consistent with high-density urban raccoon populations studied elsewhere. We are currently analyzing results of taste aversion training experiments, population estimates, and diet studies carried out in 2007. We are considering recommending a variety of population control techniques to the National Park Service for raccoon population management in the future.

Update on Yellow-crowned Night-Herons in Secaucus, New Jersey

Hugh Carola. Hackensack Riverkeeper. Hugh@hackensackriverkeeper.org.

Each year the waters of our harbor estuary recover, habitat preservation efforts move forward and we continue to witness the remarkable recovery of its ecosystems (Asian Longhorned Beetle infestations notwithstanding) and their species. At the same time, more and more people avail themselves of the many environmental education opportunities available in our region to explore those ecosystems. Among them, places like Sandy Hook, Gateway NRA and the marshes of the Hackensack Meadowlands offer the best opportunities to observe, what for us, serve as charismatic megafauna: our colonial nesting birds. As ecotourism expands to fill the increasing demand for nonconsumptive nature-based activities, it behooves us (the ones who understand the habitats and their wildlife best) to do all in our power to ensure that the birds and their fragile nesting & feeding grounds aren't "loved to death." This, while at the same time, working to ensure that acquisition and management of habitats; and enforcement of applicable wildlife laws and regulations continues and expands.

Impacts of Double-crested Cormorants on New York Harbor Islands: Vegetation and Arthropods.

Liz Craig^{1,2}, Susan Elbin¹, James Danoff-Burg², Matt Palmer². ¹Wildlife Trust, ²Columbia University. Craig@wildlifetrust.org

Over the past three decades, the Double-crested Cormorant (*Phalacrocorax auritus*) has undergone rapid population expansion throughout much of its historic range. There is mounting evidence that these populations are degrading the habitats they colonize primarily through the destruction of vegetation and the alteration of soil conditions, as well as competition with, and displacement of, other colonial waterbirds. The Double-crested Cormorant population in New York Harbor has been monitored for the past twenty years, but little quantitative analysis has been undertaken to determine the effects of this population on the New York Harbor ecosystem. This study elucidates the effects of waterbird colonies on their nesting habitats by examining plant and arthropod community structure as well as soil and leaf litter characteristics in

colonized and non-colonized areas. The results reveal that, beneath cormorant nests, plant species richness and percent cover are significantly depressed while arthropod abundance is elevated in comparison to non-colonized habitats. However, the environment beneath cormorant nests does not consistently differ from other colonial waterbirds in regards to plant and arthropod community structure, or soil and litter characteristics. These results suggest that cormorants are not currently more detrimental to their nesting habitats than other colonial waterbirds.

Status of Double-crested Cormorants in New York Harbor, 2007.

Susan Elbin and Liz Craig. New York Bioscape Initiative, Wildlife Trust.
Elbin@wildlifetrust.org.

The New York Bioscape Initiative completed its second year of projects focused on Double-crested Cormorants of the Greater New York Harbor. We conducted surveys on all harbor islands where cormorants (DCCO) have nested/do nest and assisted New York City Parks (David Künstler) with their survey of Huckleberry Island. The total number of nesting pairs this year was 1046, down slightly from the 2006 census of 1175 pairs. The 129-nest difference may be due, in part, to an earlier survey this year. One new colony was discovered in 2007 (Elder's Point Marsh, Jamaica Bay) bringing the number of breeding islands to 7. Nest numbers for each island were: South Brothers - 271; U Thant - 24; Shooters - 41; Hoffman - 155; Swinburne - 264; Huckleberry - 260; Elder's Point - 31. Surveys done with NYC Dept. of Environmental Protection in the Muscote Reservoir system resulted in 26 (Muscote) and 12 (W. Branch) nests as compared to 30 and 0 in 2006. Half of the Muscote nests and all of the W. Branch nests were on the ground. The W. Branch colony was lost to flooding before any of the eggs hatched. On Swinburne, DCCO productivity (n=15 nests) was 1.87 young/nest and 2.00 on Muscote (n=23 nests). In 2007, we color-banded 240 fledglings (orange with black alpha-numeric codes) and now have a total of 438 color-banded birds from the Harbor. The Long Island colonies, especially on Gardiner's Island, need to be included in population counts for the region. We started collecting data on loafing, roosting, and stop-over and staging areas for migration, flying surveys at dusk with LightHawk over Long Island and Sandy Hook, NJ. (See Grubel for flight line pilot study information.) The research agenda for 2008 will include: increasing the geographic scale of the population surveys, continuing to color-band and in more subcolonies, marking the nest-trees, following individual nests more closely; more behavior observations; analyzing feather samples for heavy metals; and continuing diet, foraging, and flight line observations.

Update on North and South Brother Islands

Mike Feller. New York City Parks. Michael.feller@parks.nyc.gov

This presentation discussed the recent acquisition of South Brother Island by New York City Park, the histories of North and South Brothers Islands, and the recent habitat restoration work done on North Brothers Island.

Update on Saltmarsh Island Restoration in Gateway National Recreation Area

George Frame, Doug Adamo, and Patricia Rafferty. National Parks Service.

George_Frame@nps.gov.

Jamaica Bay NY lost 90% of its wetlands during the past three centuries. The primary cause was dredging, filling, shoreline hardening, and urbanization. Dredged sediments placed on saltmarsh islands created uplands that provided nesting and roosting habitat for herons and other birds. In recent decades additional impacts accelerated the loss of saltmarsh islands to nearly 40 acres per year. Because of the importance of saltmarshes in estuarine ecology and ecosystem services, agencies responded by initiating the restoration of several saltmarsh islands. Simultaneously, researchers are investigating the underlying causes of recent saltmarsh losses. Currently, four saltmarsh islands in Jamaica Bay are in various stages of restoration:

(1) Big Egg Marsh (2 acres restored)—An experimental restoration using high-pressure spray of sand slurry was done in September 2003. A thin layer of sand, varying in thickness from 5cm to 45cm or more, was placed over a disintegrating peat saltmarsh. The sand was planted with 20,000 Smooth Cordgrass (*Spartina alterniflora*) plugs in October 2003. All plugs that remained in the soil in spring 2004 sprouted and survived. Old grass tussocks that were covered by 10 cm or more of sand all died. Beginning in the last week of March 2004, volunteer seedlings germinated in a mean density of about 200 seedlings/sq m, but a month later only 25% survived (*Spartina alterniflora* 29 stems/sq m, *Salicornia europaea* 21 stems/sq m). During the first three winters the major impacts on the restored marsh were wave erosion at edges facing a long fetch, geese digging out plants by the roots and heavily grazing young leaves, goose-deterrent fences catching wrack which eventually killed underlying plants, and nesting Horseshoe Crabs uprooting seedlings. After three growing seasons the mean stem density in the restoration site was similar to the control site (about 260 stems/sq m). The important difference is that the treatment site is uniformly vegetated (93%, based on 28 of 30 plots having vascular plants), whereas the control site is a mosaic of unvegetated mudflats and grass tussocks (70%, based on 21 of 30 plots having vascular plants). Sixteen other plots were left unplanted in October 2003, and after three growing seasons they had a stem density similar to the planted plots. By the fourth growing season, the densest plots in the restoration site achieved the same stem density as existed in the densest remnants of the original marsh (about 800 stems/sq m). Although the restored Big Egg Marsh and the control site do not have any uplands, the new higher-elevation restored marsh has a future longevity that far surpasses the disintegrating control marsh. About 60m east of the restoration site, in a mixed stand of *Phragmites* reeds and trees at the edge of a ballfield, at least five species of herons and egrets roosted irregularly, and they sometimes foraged in the control and treatment sites. In summer & autumn 2007, Black-crowned Night-Herons (2 adults with 3 juveniles) regularly roosted in the trees and fed daily in the pools of the restored marsh.

(2) Elders Point East Island (30 acres restored)—Early in 2006 the eastern island of Elders Point received sand by conventional dredging methods. By summer most of the site was replanted with Smooth Cordgrass and other grasses. The 2-acre sandy upland that existed before the restoration was used as a staging area during the 2006 nesting season, severely disrupting nesting Herring Gulls and other birds. The trees remained unharmed, the *Phragmites* reeds were reduced by herbicide, and subsequently the Jamaica Bay Guardian planted about 40 Beach Plum (*Prunus maritima*) and 3 Highbush Blueberry (*Vaccinium corymbosum*). Herons and egrets avoid the upland, probably due to the abundant gulls. An exception is that in 2005, a

night-heron nest was found in the reeds. In spring and summer 2007, animal monitoring was done for 100 days. Daily counts showed that Horseshoe Crabs nested throughout the sandy restored saltmarsh; during the peak of nesting in May nearly 1,000 Horseshoe Crabs were counted on the site during a new moon high tide. Birds in the upland were observed daily; these included an estimated 70 Herring Gull nests, 2 Great Black-backed Gull nests, 2 Oyster Catcher nests, 3 Canada Goose nests, 1 Willet nest, and 1 possible nest of a Black-Crowned Night-Heron. Fences that were installed to protect the vegetation resulted in entanglements and heightened interspecific aggression, causing the deaths of 1 Canada Goose, 3 Brants, 9 Herring Gull adults, 4 Herring Gull chicks, 3 Oyster Catcher adults, and 2 Oyster Catcher chicks. Farther away from the upland, about 6 to 20 Great Egrets and Snowy Egrets foraged almost daily in the drainages of the restored saltmarsh.

(3) Elders Point West Island (20 acres to be restored)—This island is scheduled for saltmarsh restoration beginning in late-2008 through early-2009. The Jamaica Bay Guardian reported that 28 pairs of Double-crested Cormorants nested on the 2 acres of sandy dredge-filled uplands in 2007. Several Snowy Egrets, Great Egrets, and Black-crowned Night-Herons roosted on the site. During restoration the upland will be used as a staging area, and alien trees and shrubs will be removed. After one year of disruption, the upland will be replanted with native trees and shrubs and made available again for bird nesting.

(4) Yellow Bar (58 acres)—This island is scheduled for saltmarsh restoration around 2009, depending on availability of suitable sediments. Most of the restored area will be low marsh, but as much as 12% might be high marsh. There is no upland habitat. One Osprey platform exists on this island, but no other bird nesting is known.

This rate of saltmarsh restoration, approximately 110 acres from 2002 through 2010 (about 14 acres per year), replaces saltmarsh at less than half of its current rate of loss in Jamaica Bay, NY.

Cormorant Strikes at John F. Kennedy International Airport

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Many of the bird issues at John F. Kennedy International Airport (JFK) are due to the airport's location. Looking at the environment today, it is difficult to understand why the airport was placed in a bird-rich area. Construction for the airport actually started almost 10 years before the wildlife refuge was created and 30 years before Gateway National Recreation Area was established. Given the proximity to the Atlantic Ocean, Jamaica Bay, and multiple other small parks, wetlands, and food sources there are lots of birds on or around JFK throughout the year. Combine the high bird presence with a busy international airport with over 360,000 aircraft movements in 2006 and there are bound to be some interactions between aircraft and birds. Bird strikes can be very costly to the aviation industry as well as a significant safety concern. The airport's wildlife hazard assessment and continual data collection have helped refine the species that are most hazardous as well as identified some of the causes for the birds on or near the airport. While gulls are a primary concern, double-crested cormorants are now the second most hazardous birds at the airport. We use a variety of nonlethal and lethal control methods to minimize the risk of bird strikes at the airport. We must perform a balancing act between aviation and wildlife requirements and also be responsive to the needs of the airport's

neighbors. Also see: http://wildlife-mitigation.tc.faa.gov/public_html/index.html and www.birdstrike.org/meetings/2008_BSCUSA.htm.

Diet Analysis of Double-crested Cormorants (*Phalacrocorax auritus*) in New York Harbor
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Research into the diet of the New York Harbor Double-crested Cormorant population began in spring 2006 and continued through a second field season in 2007. Boluses and pellets were collected from colonies on Hoffman, Huckleberry, South Brother and Swinburne Islands. The samples were analyzed in the lab and identified to the lowest taxonomic level. To date, a total of 35 fishes, six crustaceans, and two mollusks have been identified from both years. Nine species were identified in 2007 which were not present in the 2006 collections. Using the Schoener Index, dietary overlap of South Brother Island samples was low (0.17) compared with pooled samples from Hoffman and Swinburne islands. Comparisons between 2006 and 2007 showed substantial overlap for South Brother (0.54) and Swinburne (0.61) islands. The collections from both years support previous findings that the diet of Double-crested Cormorants is varied and opportunistic. There was no evidence of dietary concentration on species of local concern, such as winter flounder and striped bass.

Pilot Study: Observing Cormorant Flightlines in NY Harbor
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A study looking into flightlines of Double-crested Cormorants (*Phalacrocorax auritus*) began in the summer of 2007. Observations were made at locations five and ten miles from Swinburne Island from the shores of Staten Island and Brooklyn. Using a birding scope, the number of cormorants flying over the island was counted at one minute intervals beginning 1/2 hour before dawn and ending 1 hour after dawn. The work will continue in the 2008 field season.

The Landscape Project and Data Sharing in New York and New Jersey, 2007
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The Landscape Project is the GIS based tool that New Jersey's Endangered and Nongame Species Program created and utilizes to map critical wildlife habitat in New Jersey. The map was created using a combination of aerial photographs, land use/land cover classifications, and spatial species survey information. Every species has its own models applied to different aspects of their biology. For wading birds, there are models for their nesting colony and for their foraging areas. These models are integrated with the maps from the Landscape Project, and where they intersect the patches are valued as important for that species. These valued patches become important in prioritizing land acquisitions as well as determining regulatory actions. The NY/NJ Harbor presents an interesting situation, where the nesting sites are in New York,

but some of the areas that those birds would forage in are in New Jersey. This presents no technical mapping problems, leaving data sharing as the only issue to protecting New Jersey foraging areas of New York colonies. Data sharing will be discussed between the two states, with the goal of open communication as the desired outcome.

Goose and Huckleberry Islands, 2007

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Goose Island: Great Egret – 24 nests; Snowy Egret – 20 nests; Black-crowned Night-Heron – 33 nests. Is mammal predation (e.g. – Raccoon) becoming a trend? We lost the four Yellow-crowned Night-Heron nests of 2006. Nest productivity of Great Egret was 2.8 young/nest, better than the 2.5 mean.

Huckleberry Island: Double-crested Cormorant – 262 nests; Great Egret – 1 possible nest; Black-crowned Night-Heron – 6 nests; American Oystercatcher – 2 pair; Great Black-backed Gull – 36 nests/birds; Herring Gull – 14 nests. It appears waders are coming to an end on Huckleberry Island.

Green Harbor Task Force

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Challenges: Our waterways are the cleanest they've been in a century, but there is still much work left to do to achieve a safe and healthy environment in and along our rivers, creeks, canals and bays. The federal Clean Water Act of 1972 firmly established the goal of fishable, swimmable water for all people. To achieve this goal, water pollution has been reduced dramatically and more than two dozen new sewage treatment plants have been built all over the region. Now, fish and shellfish are making a dramatic comeback and swimming in the harbor is a regular activity for many. Still, with thousands of acres of brownfields along the shore, toxic hot spots found in the water and more than 600 combined sewer overflow pipes still polluting our harbor estuary, it's clear we still have a long way to go to clean up our waterways.

Resources: Fortunately there are numerous efforts already underway. Community and environmental groups are rallying around long-abused waterways like Newtown Creek and the Passaic River. Public agencies are hard at work upgrading treatment plants, reducing combined sewer overflows and capping and buffering landfills along Jamaica Bay and the New Jersey Meadowlands. Private groups are working to stanch industrial contamination at its source or where it has pooled, and to craft a comprehensive plan for restoring our waterways and natural areas. New Jersey, New York State and New York City are all working to accelerate the cleanup of contaminated sites.

Such efforts have produced invaluable reports and other resources that the Green Harbor Task Force would highlight and employ. Some examples include: "Target Ecosystem Characteristics for the Hudson Raritan Estuary," (Hudson River Foundation); "Sustainable Raindrops: Cleaning New York Harbor by Greening the Urban Landscape," (Riverkeeper); "Industrial Ecology, Pollution Prevention, and the New York/New Jersey Harbor," (NYAS); "Harbor Herons Monitoring Report," (NYC Audubon Society); "PlaNYC 2030: A Greener, Greater New York," (NYC Office of Long Term Planning and Sustainability). Of course, there

are many other efforts we will seek to draw upon in forging the Green Harbor Agenda.

Possible Recommendations/Starting Points for Discussion: Restore 500 acres of oyster beds by 2012; Restore or acquire 1200 acres of coastal wetlands by 2012; Open up 90% of waterways for human recreation by 2030; Reduce CSO effluent from NYC by 185 MGD during rainstorms; Plant 1 million new street trees in New York City to reduce urban runoff; Update science on water quality and stormwater modeling to better incorporate impacts of soil types, green roofs and other porous surfaces; Establish wide range of pilot projects for CSO mitigation that include wetland restoration, upland greening and tree planting, increased rainwater infiltration, and community education and monitoring; Develop a holistic plan for restoring waterways in the Hudson-Raritan estuary, including sediments, water quality, shoreline habitats and public access; Identify sources of persistent contamination and create concerted effort to stanch them; Secure and protect remaining wetlands.

Conservation in the Arthur Kill Watershed

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Historically, the Arthur Kill portion of the NY/NJ Harbor Estuary was well recognized as a unique natural area within the region. Though often thought of as a “backwater” of the estuary (not being a direct recipient of the freshwater influence of the Hudson River), the Arthur Kill does receive a great volume of fresh water from numerous sources in New Jersey (from the Passaic and Hackensack Rivers in the North, to the Raritan and Rahway Rivers in the West and South). Additionally, the Arthur Kill receives approximately 15,000 to 20,000 acres of fresh water drainage from the West Shore of Staten Island (much of this through the great Old Place and Fresh Kills creek drainage area). Numerous state and globally-imperiled plant and animal species were known to exist there (including Nantucket Juneberry, Torrey’s Mountain Mint, Precious Underwing, and the American Burying Beetles). Before the intrusion of modern facilities (such as the West Shore rail-line), Colonial Wading Birds (CWBs) were known to nest on the mainland of Staten Island. Though much of the area would suffer from the establishment of an industrial corridor on both the New Jersey and Staten Island side of the Arthur Kill, early efforts by local naturalists to protect certain natural features led to the creation of the William T. Davis Wildlife Refuge and La Tourette Park in the Fresh Kills watershed of Staten Island.

In the modern era of scientific study and natural areas conservation, it has been discovered that much of the “industrial core” of the Arthur Kill has survived and, when industrial facilities such as oil tank farms and the like are removed, natural processes in the area have led to (at least a partial) restoration of the historical landscapes. In this “post-industrial” landscape, numerous endangered species have been identified. Many of the plant communities that have survived (including the Blackjack Oak/Post Oak-dominated Maritime Oak Forest) have been identified as unique to the Arthur Kill and, therefore, globally-imperiled. Starting in the 1980’s, the three islands that exist in the Arthur Kill and Kill Van Kull (Shooter’s, Prall’s, and the Isle of Meadows) were discovered to play host to large colonies of CWBs, whose numbers increased throughout the 1990’s before diminishing again into the new millennium.

While the unique nature of the Arthur Kill portion of the NY/NJ Harbor Estuary has led to the protection of many sites both in New Jersey and on Staten Island (including the protection of the three nesting islands), no comprehensive plan for the region has developed past proposals

made by Manomet Observatory (in the "Harbor Herons Report" of 1986), by the New Jersey Conservation Foundation (in "Greenways to the Arthur Kill", 1993), and by the Trust for Public Lands (in "An Islanded Nature", published in 2001). After the Exxon-Bayway oil spill of 1990, the federal EPA (part of the lawsuit against Exxon that followed the spill) designated the "Harbor Herons Wildlife Refuge", which appears well-intentioned though not enforceable or fundable through this particular designation. The New York City Department of City Planning (DCP) has begun a local process and study for the New York portion of the Arthur Kill, though the perspective of this study seems to be more focused on re-development of some of the post-industrial sites than in the protection of natural resources.

While no comprehensive plan currently exists for the Arthur Kill portion of the estuary, numerous local and state-agencies have acquired numerous sites within the watershed (thus demonstrating a vested interest in the natural resources of the region). The three Arthur Kill islands, as well as large freshwater and tidal sites (including Saw Mill Creek, Neck Creek, and the Staten Island Corporate Park) have been acquired by NYC Department of Parks and Recreation (DPR). Approximately 80 acres of the Old Place Creek tidal marsh system has been purchased recently by the NYS Department of Environmental Conservation (NYS DEC). The NYC Department of Environmental Protection (DEP) has developed a unique storm-water drainage system called the SI Bluebelt, which somewhat protects hundreds of acres of natural areas in South Richmond. NYS has created and administers the Clay Pit Pond State Park Preserve, a site that protects numerous rare plant and animal species associated with the cretaceous sands and gravels that occur there.

Though these numerous parkland acquisitions have occurred with the protection of natural resources in the region as a goal, the lack of a "master plan" for the Arthur Kill is having significant repercussions (certain of which, if not addressed, will have long-term negative impacts on the resource as a whole). The re-development of the GATX oil tank field will remove up to 675 acres of prime wetland and upland habitats in the Old Place Creek system (which currently is home to numerous species known to breed there, including Southern Leopard Frogs, Diamond-back Terrapins, Red Fox, Yellow-crown Night-Herons, Least Bitterns, Moorhens, and Virginia and Clapper Rails). While a concerted effort from the naturalist community and the public in general led to the defeat of a proposal to bring a mammoth NASCAR stadium to the site, the site is currently being evaluated for use as a Tier 2 Warehouse facility to service the re-opened Staten Island Container Terminal.

The restoration of large closed landfill sites to as natural a condition as possible is a region-wide issue, on Staten Island being played-out at the titanic Freshkill Landfill (and nearby Brookfield Landfill, a current superfund site being administered by NYC DEP). While it is impossible to restore the nearly 900 acres of tidal *Spartina* marsh that were destroyed during the 50 years of operations at Freshkills, a tremendous opportunity exists to restore freshwater wetland and upland native plant communities on the site. Given that un-estimable quantities of toxic lechate were allowed to leach into the Freshkills creek system over many decades, the amelioration of toxins in the creeks must be of the very highest level of importance in the transfer of the 2,200 acres sites from the NYC Department of Sanitation to NYC Parks. Unfortunately, much of the planning process for Freshkills currently is focused on major infrastructural issues (such as building an arterial road system within Freshkills intended to move traffic from the West Shore Expressway to Richmond Avenue in the East), and facilities for active recreation.

The Sweetbay Magnolia Conservancy (SMC) was established in 1996 as a 501(c) 3 not-for-profit organization dedicated to the continued study of the West Shore of Staten Island, leading to the creation of a “wildlife” refuge for the whole of the Arthur Kill watershed (though we do recognize that the native plant communities and endangered plant species that occur there are equally as important as the wildlife resources). At the time of incorporation, the NYC Department of Economic Development (EDC) was attempting to sell off much of the city-owned lands at the SI Corporate Park for development. Historically, this site was known as the “Great Swamp” and contained the largest “old-growth” Sweetgum swampforests in the region. Within days of relocating a grove of Sweetbay Magnolias (an endangered species in New York State, reaching its natural Northern range limit on Staten Island), a developer’s bulldozer destroyed much of the grove (despite not having a permit from the US Army Corp to fill under the Clean Water Act). After many hundreds of hours of negotiation amongst the regulatory agencies and the City of New York, the conservancy was able to limit much of the development to areas that had been formerly disturbed. Almost 300 acres of the unique natural areas was transferred to NYC Parks.

The SMC is endeavoring to create a “commission on the Arthur Kill” (similar to the one convened locally in 1982-84, that helped to create the Staten Island Greenbelt (a 2800 acre natural area in the central hills area of Staten Island). Our hope is to bring together members of the regulatory community with conservation groups and natural areas researchers, in an effort to make specific recommendations as to the creation of an Arthur Kill Wildlife Refuge (AKWR). The focus on natural areas protection and restoration of landfill sites will be central to this effort, though we are also interested in making recommendations as to the relationship between continuing industrial uses in the Arthur Kill and protection of natural resources. This might include ongoing maintenance and pollution issues, as well as development of a real local response effort to protect natural resources in the case of an oil spill or other man-made catastrophe. Given the industrial nature of many of the businesses in the Arthur Kill, some focus should be given to developing wildlife rehabilitation facilities that could respond to such catastrophes within the watershed itself.

We are reaching out to the scientific and regulatory community (as well as citizen groups and local politicians) to begin the process of establishing such a committee. We would like to make the platform for discussion as broad as possible from its inception and, to this end, efforts are being made to have input from the various industrial facilities along the Arthur Kill corridor. It is also critically important to this process that issues relating to both sides of the Arthur Kill (New York as well as New Jersey) be address concomitantly and in a balanced way. To this end, we are very interested in input from researchers and conservation groups working in the New Jersey watershed to the Arthur Kill.

Use of Artificial Eelgrass Mats by Saltmarsh-Nesting Common Terns

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Terns and skimmers nesting on saltmarsh islands often suffer large nest losses due to tidal flooding. Nests located near the center of an island and on wrack (mats of dead vegetation, mostly eelgrass *Zostera*) are less susceptible to flooding. In the mid-1980’s Burger and Gochfeld created artificial eelgrass mats in saltmarsh-island colonies in New Jersey, USA. Every year since 2002 I have transported eelgrass to one of their original sites, Pettit Island,

which currently supports approximately 250 pairs of Common Terns (*Sterna hirundo*). In some years there has been very little natural wrack present on the island at the start of the breeding season, and in most years natural wrack has been most common along the edges of the island. Placing eelgrass in the center of the island has encouraged terns to nest in the center, not only on the mats, but also in adjacent saltmarsh cordgrass (*Spartina alterniflora*). These terns have often avoided the large nest losses incurred by terns nesting in peripheral locations, but during particularly severe flooding events even centrally located nests are vulnerable.

The Plant Ecology of New York Harbor Island: Impacts of Colonial Waterbirds and Restoration Targets

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The islands in New York Harbor that support populations of colonial waterbirds also support several different types of terrestrial vegetation. This vegetation includes abundant populations of non-native plant species, but also includes many native plants typical of frequently disturbed habitat. The vegetation directly beneath waterbird colonies on Hoffman and South Brother Islands shows reduced plant cover and species richness, although the species composition of these communities varies between islands. South Brother Island, with a longer history of waterbird colonization, has a larger component of annual and disturbance-associated species. Waterbirds nest in both native and non-native trees. Restoration projects on these islands should carefully identify the desired outcomes, both in terms of composition (native vs. non-native species) and structure (closed-canopy forest, shrubland, grassland, or a mosaic?). Restoration projects should also explicitly consider the functions of this vegetation as habitat for waterbirds and other organisms and as sites for education, recreation, and continued research.

Report on New York City Audubon Projects

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New York City Audubon is currently engaged in three major outreach and education projects focused on Harbor Herons. Eco-cruises to nesting colonies, first begun in 2003 in partnership with NY WaterTaxi, served nearly 2,000 people this summer, including 300 students in summer camps serving traditionally underserved communities. A new Partnership with THE POINT, a community and youth development organization in Hunts Point will engage South Bronx High School students in learning about, monitoring and doing habitat restoration work at North and South Brother Islands. A third program, the HeronCam, established a live webcam at the Goose Island nesting colony. The webcam, using technology provided by EarthCam is available to the public March – September on NYC Audubon's website, and will soon be available at a Kiosk to be prototyped at the Prospect Park Audubon Center in early 2008 and installed at a Port Authority site in the spring of 2008.

Double-crested Cormorant Colony in Jamaica Bay.

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During routine boat patrols and restoration work in Jamaica Bay, Don discovered a new colony of Double-crested Cormorants on Elder's Point Marsh (west), a small 2 acre site across from the Fountain Avenue landfill. The site contained 28 nests in several Ailanthus trees. Also present on the site were a few Great and Snowy Egrets and Black-crowned Night-Herons. Don's presentation also included information about possible new colonies of Yellow-crowned Night-Herons at Fresh Creek and Big Egg marsh sites and an update of habitat management concerns.

Non-invasive Health Monitoring Methods of a Bioindicator Species - the Double-crested Cormorant in New York Harbor.

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Following a mid-century decline caused by high environmental concentrations of chemical contaminants such as organochlorine pesticides and heavy metals such as mercury, the Double-crested Cormorant (*Phalacrocorax auritus*, DCCO) has undergone rapid population growth. Results from studies in the Great Lakes DCCO populations clearly link contaminant concentration in water and cormorant health, making cormorants an effective bioindicator for water quality. Tissue sample analysis is the most direct method to quantify environmental effects on an individual animal and gain insight on the overall ecosystem, but it is an expensive, time-intensive, and invasive process. This pilot study sought to find a rapid and noninvasive assessment for contaminant load at the sub-lethal level in cormorants nesting in the New York Harbor using behavioral indicators. During June and July 2007, five experimental behavioral tests were developed from published work with other bird species and were tested on DCCO chicks at two study sites: Swinburne Island and the Muscoot Reservoir. The sample sizes were limited by logistical problems, and there was not a statistically significant difference between the behaviors of cormorants at each site. Hypotheses include: a) there were differences but they were not observed; b) the behaviors studied were not affected by contaminant load; c) environmental contaminant concentrations are too low to produce an observable effect. To further test the hypotheses, I analyzed reproductive success and contaminant data collected by Parsons and Schmidt from three New York DCCO populations in the summer of 1999. Again, no statistically significant relationship between reproductive success and concentration of chemical contaminants in egg tissues was found, supporting the hypothesis that environmental contaminant concentration is not the most important factor shaping New York Harbor DCCO populations.

Great Captains Island Important Bird Area Conservation Plan - a Plan of Action.

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The Great Captains Island Important Bird Area Conservation Plan was created with the overarching goal to protect and promote the existing wading bird breeding colony. This 17 acre island in southwestern Connecticut not only has one of the largest heron and egret colony's in southern New England but it is a relatively undeveloped offshore island; a rare and unique habitat in the highly developed western Long Island Sound region. The most immediate threats

to these birds are human disturbance in the colony and on foraging areas, and the risk of predation from mammal and avian predators. Management actions that address these threats will provide the best chances of success for a viable bird population on the island. The overall goals for the island are to 1) incorporate management actions within the Conservation Area to support an enduring and healthy breeding population of wading birds; 2) foster communication among stakeholders; 3) develop a robust education component; 4) improve the protection and health of associated foraging habitats; and 5) establish inventory, monitoring, and research programs to address the gaps in information on island wildlife species. This plan was conceived by Audubon Connecticut and Manomet Center for Conservation Sciences with support from the Town of Greenwich, Audubon Greenwich, the State of Connecticut Department of Environmental Conservation, and additional stakeholders in Connecticut and New York. The plan was made possible through contributions by The Jeniam Foundation, Mead Witter Foundation and Emily McKay.

The State Wildlife Grant (SWG) Process.

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This is an introductory look at the NY State Wildlife Grants program including background information on how the grants work, ecosystem-based management, and statewide watersheds. Focus will also be given to the local issues and identified watershed recommendations for colonial-nesting herons available for funding through the granting program.

New York City Parks in the Harbor.

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Working with public and private partners, the sale of South Brother Island, the last remaining privately-owned island in New York Harbor, to the Trust for Public Lands, closed during November 2007. This was followed immediately by the transfer of the Island to the Department of Parks & Recreation. South Brother was nominated for acquisition because of its prominence among the Harbor Heron Islands - supporting one of the most stable and healthy populations of wading birds in the area. Parks now manages 9 of the islands included in the Harbor Herons Project. We continue to partner with NYC Audubon, NY-NJ Harbor Estuary Program, and others to conserve important colonial wading bird habitat.

Earlier in the year, on Earth Day, Mayor Bloomberg announced PlaNYC 2030, the city's long-term sustainability plan. By 2030, our population is projected to increase by 1,000,000, surging past 9,000,000 people. Containing more than 100 initiatives, PlaNYC focuses on 5 key dimensions of the city's environment – land, air, water, energy, and transportation. Parks is the lead agency for a new citywide greening effort to increase tree canopy coverage, in order to realize the tremendous associated benefits of improving air and water quality, retention of greenhouse gases, and reducing heat island effects and energy consumption. The PlaNYC Million Trees Project calls for Parks to achieve 100% stocking of the City's street trees by planting an estimated 200,000 additional trees and to reforest approximately 2,000 acres of

parkland and publicly-owned natural areas; as well as for 400,000 additional trees to be planted on privately-owned property, through the support of the community, businesses, and individual citizens.

The benefit to wildlife, as well as people, is another expected outcome. Parks expects the Reforestation Initiative to both enhance and create bird habitat. In selecting planting sites around the City, consideration will be given to the Harbor Heron Islands, especially Prall's Island and North Brother Island, where habitat enhancement and restoration projects have already been proposed.

Work at DEP Landfills in Brooklyn.

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The reclamation of municipal waste landfills presents many interesting challenges including the management of wildlife. Landfills located in urban areas present additional challenges for wildlife managers. Reclamation of the Pennsylvania Avenue and Fountain Avenue Landfills in Brooklyn, New York has drawn special attention due to their proximity to JFK International Airport and the concern of avian wildlife attracted to the vegetative restoration work being conducted. Preliminary data from the first 5 months of wildlife management activities conducted by USDA-Wildlife Services show that on average 206 Canada Geese, 48 Gulls, 25 European Starlings, and 12 Crows are hazed from the landfill per day. In addition to hazing activities surveys are conducted on the sites to determine species use. Twice weekly point counts are conducted at each landfill for avian species and small mammal trapping is conducted seasonally to determine mammal species present.

Piping Plover Status Report.

Kim Tripp and Jessica Browning. Jamaica Bay Institute, Gateway National Recreation Area. Kim_Tripp@nps.gov.

Piping Plovers (*Charadrius melodus*) nest throughout Gateway National Recreation Area (Gateway). In the Jamaica Bay Unit, plovers are regularly seen at the Breezy Point Tip, West Beach, Fort Tilden, and Jacob Riis Park. They are also found along Sandy Hook in the New Jersey portion of Gateway. Nesting success has fluctuated through the years since monitoring began in 1988. The greatest number of chicks fledged (77) occurred in 2006. The lowest number of fledglings (9) occurred in 1996. Fledging success rate (# chicks/ # nests) was the highest in 2002 (1.92). The lowest occurred in 1996 with a fledging rate of just 0.18. The regional goal for plover recovery is a fledging success rate averaging 1.5 over a five year period (USFWS 1996). Conservation of this federally threatened species requires intensive management. When they select nesting sites in March; all is ideal. However, pressures mount when beach lovers and sunbathers visit these same beach sites by the thousands. Plovers experience: disturbance, egg and chick crushing, and predation by animals attracted by human presence (e.g. rats, cats, crows, sea gulls). Park managers ameliorate these impacts by constructing exclosures that function to protect the nest from predation. Symbolic fencing cordons off an area unavailable to the public and buffers the plovers from major disturbances. In addition to all of these threats, major storms and supra high tides can flood a nest or force a

pair to abandon their nest, exposing the eggs to the elements. This vulnerability is steadily increasing due to the stabilization effects of the terminal jetty at Breezy Point Tip. The vegetation is getting denser and is expanding into the beach strand, narrowing the zone between the high tide line and the foredune. Gateway is considering an experimental area of vegetation removal to address this habitat reduction. All of these management measures implemented and proposed benefit piping plovers and other shorebird species, such as common and least terns, oystercatchers, skimmers, and the federally endangered Roseate Tern. Also see: <http://www.nature.nps.gov/jbi/>

Contaminant Levels in Birds Breeding in the Hackensack Meadowlands.

Nellie Tsipoura¹, Joanna Burger², Ross Feltes³, David Mizrahi¹. ¹New Jersey Audubon Society, ²Rutgers University, ³New Jersey Meadowlands Commission. Nellie.Tsipoura@njudubon.org.

The Meadowlands District consists of a diverse mosaic of tidal, brackish, freshwater and forested wetlands within an urban setting. These valuable habitats attract a multitude of bird species, however, persistent sources of contaminants remain an ongoing concern. Contaminant exposure in birds can negatively affect reproduction, nest survivorship and nestling growth. In 2006 we initiated a project to: 1) determine contaminant levels in feathers, eggs, and blood of birds breeding in wetlands of the District; 2) investigate patterns and correlations in tissue contaminant levels and breeding success of birds; and 3) examine differences in contaminant levels of avian tissues at different sites.

We studied contaminant levels in eggs, blood, and feathers of Red-winged Blackbirds (*Agelaius phoeniceus*), Marsh Wrens (*Cistothorus palustris*), and Tree Swallows (*Tachycineta bicolor*), all intermediate trophic level, passerine bird species. In addition, we monitored nesting success and chick growth to ascertain how contaminant concentrations relate to these biological parameters. We searched for nests of blackbirds and wrens at three Meadowlands sites, and monitored each nest from the day it was found until the young fledged or the nest failed. Similarly, we monitored a small number of swallow nest boxes. We collected one egg from each nest, and right before fledging we collected feathers and blood samples from each chick. At the same time, we weighed the chicks and measured fluctuating asymmetry in their culmen, wing, and gape. We analyzed tissues for arsenic, cadmium, chromium, mercury, and lead. Using modeling approaches and nonparametric and multivariate statistics, we investigated differences between sites and/or between species in daily survival rates, fledging success, and contaminant levels, and explored the effects of contaminants on morphometric parameters.

Lead was relatively high in feathers, and even higher in blood for all three species, reaching levels at which negative effects are anticipated. Marsh Wrens, the species with the highest lead concentrations in blood, displayed a negative relationship between blood lead level and chick weight. However, we saw no obvious signs of lead poisoning. Mercury, while below levels considered biologically harmful, was higher in the eggs and feathers of Meadowlands birds than those documented in other studies of passerines. Furthermore, un-hatched eggs from wrens had higher mercury levels than randomly selected viable eggs. Chromium levels were relatively high in eggs and in blood, but lower in feathers, compared to those reported in the literature. Cadmium and arsenic occurred at levels that are not considered biologically harmful. While levels of some metal contaminants were high in our study, they were lower than those reported previously for bird tissues from the Meadowlands District. Finally, our study revealed

few differences between sites in nest success and metal contaminant levels, and no relationship between metal levels and measures of fluctuating asymmetry.

LightHawk: Flight Resource and Conservation Partner.

Kelley Tucker. LightHawk. ktucker@lighthawk.org.

LightHawk is a nonprofit aviation organization that flies conservation missions in partnership with a network of more than 130 pilots and over 800 environmental organizations throughout North and Central America. This brief presentation will introduce the audience to LightHawk and briefly outline current eastern program foci and how interested groups can use LightHawk strategic, informational, and flight resources.

Prevalence of Botulism in Bird Colonies on Lake Ontario.

Chip Weseloh. Canadian Wildlife Service, 4905 Dufferin St. Toronto, Ontario M3H 5T4.
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Six islands in eastern Lake Ontario were surveyed every 10 days, July - October, for avian mortality. In three years over 4,800 dead birds were found. They were comprised mostly of Double-crested Cormorants (67%), Ring-billed Gulls (14%), Herring Gulls (10%), Great Black-backed Gulls (4%) and Caspian Terns (4%). Twenty-four of 28 birds submitted for necropsy were confirmed to have died from Type E Botulism. Peak mortality occurred during the 21-31 July period but there was major mortality all during mid-July through mid-August. There was differential mortality among the six sites. Great Black-backed Gulls appeared to be extremely susceptible to botulism. During the period from 2000 to 2006 their breeding numbers in eastern Lake Ontario went from nearly 40 pairs to 1 pair. This study shows that although the numbers of a given species dying from botulism, or any disease, may not be great, it must be weighed against the local population level.

Using Flightlines and Boat Surveys to Identify Feeding Areas and Foraging Distances of Cormorants on Lake Ontario.

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In areas where large numbers of cormorants breed, following their daily flightlines, or counting birds as they fly along their flightlines, can be a very informative and cost effective means of gathering data on where they feed and how far they fly. Three areas of Lake Ontario were studied to determine morning flightlines as birds dispersed from their roosts: Hamilton Harbour, Toronto Harbour and the Kingston area. At the two harbour sites, large numbers of birds fed close to home, within 5 km of the breeding colony. At all three sites, up to about x% of the breeding population also flew up to 25 km from the colony to feed. Flock sizes ranged from 1 to 830 birds, median flock size was 1 while mean flock size was 7.8 birds. All-day watches (sunrise to sunset) showed there were three peak periods of flight activity, two going away from the colony, morning and afternoon, and one returning to the colony, late afternoon. A 30 km

boat survey route for foraging cormorants was established in Greater Kingston Harbour in late August. Nearly 3x as many feeding flocks were encountered in shallow water areas as in deep-water areas. More than 92% of all flocks encountered were comprised of 1-2 birds whereas 87% of all birds encountered were in flocks > 2. Water- and land-based observations of cormorant flightlines and the distribution of feeding flocks offer a financially efficient method of assessing feeding strategies for this species.



Presenter Biographies

Dave Adams

David Adams is a Senior Wildlife Biologist with the Nongame and Habitat Unit of the New York State Department of Environmental Conservation. He holds a Masters Degree from the State University of New York State and has been employed by the Department since 1991. As the state Waterbird Specialist, he coordinates monitoring, research and management projects pertaining to waterbirds and the Bird Conservation Area Program.

Christine Banks

Christine Banks is a Program Officer at Wildlife Trust. She has a B.S. in Natural Resources from Cornell University, and is in her second year of the Conservation Biology M.A. program at Columbia University. Her work at Wildlife Trust has focused on the field of Conservation Medicine and its applications, especially in Latin America. She is also the Editorial Assistant for the peer-reviewed journal *EcoHealth*, as well as a student coordinator for the student section of the International Association for Ecology and Health, and is on the editorial board of the Columbia Undergraduate Science Journal.

Andy Bernick

Andrew Bernick received a B.S. in Wildlife Biology and Management from the University of Rhode Island in 1993 and a Ph.D. in Biology from the City University of New York-Graduate Center in 2007. His research interests include foraging ecology, population dynamics, and conservation of wading birds in urban ecosystems; the role of birds in infectious disease transmission (e.g. Lyme disease, West Nile virus); and the use of satellite telemetry in animal tracking. Dr. Bernick has lead wading bird surveys for NYC Audubon's Harbor Herons Project since 2005, and currently works as an ecologist with AKRF, Inc.

Russ Burke

Dr. Russell Burke earned his M.S. in Wildlife Ecology from University of Florida and his Ph.D. at the University of Michigan in the Department of Biology. He spent two years as a post-doc at UM's School of Natural Resources and the Environment. He joined Hofstra as an assistant professor in 1996 and was promoted to associate professor in 2002.

Dr. Burke is primarily interested in the ecology, evolution, and conservation biology of turtles and lizards. Most of the species he has studied have either been introduced species or rare species, thus population control (both positive and negative) is usually involved. One of his research projects interests is the population of diamondback terrapins in Jamaica Bay, which he and his students have been studying since 1998. The terrapins face a number of interesting conservation issues, including decreasing salt marsh habitat, pollutants in the Bay, raccoon and plant predation on eggs, and rat predation on hatchlings.

Hugh Carola

Hugh Carola is the program director at Hackensack Riverkeeper, Inc. (HRI). He holds a Bachelor's Degree in Political Science from Ramapo College of New Jersey and a Limited Master of Inland Waterways license from the US Coast Guard. After a sixteen-year retail management career that ended in 1999, Hugh spent six months as a volunteer assistant to Capt. Bill Sheehan, Riverkeeper and HRI founder. His new career began in July 1999 when he was hired as coordinator for the Hackensack Meadowlands Preservation Alliance (HMPA). Under Hugh's leadership, the HMPA grew tenfold from twelve members to a coalition over 120 groups by January 2001. That was also the month in which Hugh joined the HRI staff as program director. As such, he oversees the organization's Eco-Programs that serve over 5,000 people annually. Since 2002, Hugh has conducted over 650 Eco-Cruises aboard the Riverkeeper vessel "Robert H. Boyle" for colleagues, students and groups of all description on the Hackensack River and through the saltmarshes of the NJ Meadowlands. Hugh also serves as HRI's wordsmith, writing the majority of the organization's press releases, policy documents and official correspondence. In 2001, he helped found the New Jersey Catholic Coalition for Environmental Justice (NJCCEJ) and currently serves on its Coordinating Committee. In 2003, he was named to the Hackensack, NJ Environmental Commission, a post to which he has since been reappointed. In January 2005, Hugh was honored by the Alliance for New Jersey Environmental Education (ANJEE) and received its Outstanding Environmental Educator Award for 2004.

Liz Craig

Elizabeth Craig recently graduated from Columbia University's undergraduate program in Ecology, Evolution and Environmental Biology, where she conducted her senior thesis research on the impacts of Double-crested Cormorants (*Phalacrocorax auritus*) and other colonial waterbirds on their nesting environment and understory community. Elizabeth is currently the program assistant for Wildlife Trust's New York Bioscape Initiative. She hopes to continue researching colonial waterbirds in the future, with a focus on toxicology, population dynamics, and conservation.

Susan Elbin

Susan Elbin, Senior Scientist, is the Director of Wildlife Trust's New York Bioscape Initiative, a program focusing on issues that have emerged as a result of suburban sprawl in the region: over-abundant and invasive species, human-wildlife conflict, and ecotoxins. In addition to leading the initiative, Susan conducts research in behavioral ecology. Her current research projects include work on over-abundant and invasive species, studying the distribution and abundance of Mute Swans, an invasive species, in the Hudson River Estuary and a similar study of Double-crested Cormorants, a native but potentially over-abundant species in the New York Harbor, and to assess their potential impact on the biodiversity of the river. Prior to joining the Wildlife Trust, Dr. Elbin worked in a variety of departments at the Wildlife Conservation Society, including the Bronx Zoo Education Department, Ornithology Department, and the Science Resource Center. While at WCS she worked on a variety of projects including studies of avian ecology and behavior in disturbed/restored grassland habitats and social behavior and use of space in bird exhibits at the Bronx Zoo (Bronx, NY, USA). She is an active member of

the Waterbird Society, serving as a member of the Executive Council, Conservation Committee, and as chair of the Membership Committee. Susan is the co-chair of the Harbor Herons Subcommittee. Elbin holds an MS degree in Ecology from The Pennsylvania State University and a Ph.D. in Ecology and Evolution from Rutgers University.

Mike Feller

Michael is the Chief Naturalist for the City of NY Parks & Recreation, Natural Resources Group. He has a degree in Anthropology from SUNY, Albany and has done graduate work in Archaeology, Ethnobotany, and Cultural Ecology. This is his 24th year at Parks performing and supervising natural resources inventory, protection, management, restoration, interpretation, and policy formation throughout New York City.

George Frame

George W. Frame, Ph.D., is a biologist in the Division Natural Resources at Gateway National Recreation Area, NY & NJ. His work primarily is saltmarsh monitoring.

Laura Francoer

Laura Francoeur is a Wildlife Biologist with The Port Authority of New York and New Jersey at John F. Kennedy International Airport. Since 1999, she has been responsible for developing and administering the airport's wildlife management program. Prior to coming to JFK, Laura worked for USDA-Wildlife Services in Virginia conducting wildlife hazard assessments at Richmond International Airport and Accomack County Airport and assisting with projects at Washington Dulles International Airport, Ronald Reagan Washington National Airport, and Newport News/Williamsburg International Airport. Laura received her bachelor of arts degree in zoology from Connecticut College and her master of science degree in wildlife biology from Clemson University. She is qualified by FAA as an Airport Biologist and has received the American Association of Airport Executive's A.C.E.-Operations certification.

Colin Grubel

Colin completed his undergraduate degree in Biology at Alfred University in 1999. He was a zookeeper in both Ross Park Zoo in Binghamton, NY and Zoo Atlanta, GA for 4 years before deciding to pursue his Masters degree at Queens College. The presented material covers the preliminary findings in his thesis work. He is eager to begin the next field season.

Christina Kisiel

Christina Kisiel is a Senior Environmental Specialist with the New Jersey Division of Fish and Wildlife's Endangered and Nongame Species Program, where she has been since 2002. Her responsibilities include beach nesting birds, colonial waterbirds, and secretive marsh birds. She is currently working towards her master's degree at Rutgers University, where her research focuses on the piping plover.

David Künstler

David S. Künstler received a B.A. in Biology from Southampton College of Long Island University in 1977 and an M.A. in Biology from SUNY New Paltz in 1982. Various properties that were biologically surveyed for hopeful (and ultimately actual) protection include Wodaembarc in Northport; Freilich Farm, Cold Spring Harbor; and Fish Thicket Nature Preserve in North Patchogue, which includes Threatened Pitch Pine-oak-heath woodland and Endangered Pitch Pine-scrub oak barrens (oak brush plains). He began working for N.Y.C. Parks in 1985, in the Natural Resources Group 1985-1986, and on Pelham Bay Park Natural Areas Management Plan in 1988. He then went on to Van Cortlandt and Pelham Bay Parks Administrator's Office as Wildlife Manager. Dave contributed to the Pelham Bay Park Management Study (1987), finding and managing rare plants and wildlife, revegetating and managing PBP landfill, reintroducing reptiles, attracting nesting bluebirds, working with old field and old-growth forest restorations and conducting wildlife censuses.

Roland Lewis

A lifetime New Yorker, Roland Lewis has worked in the field of community development since 1984, when he began as a program associate at the Trust for Public Land. A graduate of Columbia University, he then went on to earn a Masters of City and Regional Planning and a Juris Doctor from Rutgers University in 1988. This was followed by nine years as a partner in the law firm of Dellapa, Lewis, and Perseo, whose clients included not-for-profit corporations, civic groups, churches, cooperative corporations, and private real estate developers. Starting in 1997 Roland became the Executive Director of Habitat for Humanity – NYC. Roland led the organization for ten years, guiding it to become one of the top producers in the region and a nationally emulated model of Habitat urban success.

In the spring of 2007, Roland took the helm of the Metropolitan Waterfront Alliance, a newly incorporated not-for-profit dedicated to the improvement of the New York and New Jersey harbor and waterways.

In addition to his professional experience with community development, Roland has also been active with many non-profit community organizations. He served as Co-Chair of Housing First! and is now on the board of the New York Foundation.

Roland lives in Flatbush, Brooklyn with his wife and four children.

Richard Lynch

Richard Lynch is a botanist specializing in native plant community modeling and restoration, as well as reconnaissance and taxonomic clarification of endangered native plants. He has successfully paired this scientific interest over the last 32 years, working on Staten Island with conservation efforts leading to the protection of numerous natural areas as parkland. He helped represent NYC Department of Parks on the original committee for the Greenbelt, which led to the creation of a 2800 acre natural park in the central hills of Staten Island. Ongoing efforts have led to the creation of endangered species-directed parkland acquisition, including the protection of a unique grove of endangered Willow Oak hybrids not known elsewhere in the state. The

discovery of the globally-imperiled Torrey's Mountain Mint at Kreicher Hill (on Staten Island) led to the protection of the colony and another 45 acres of the site being protected as a parkland buffer to the Adjacent Clay Pit Pond State Park Preserve.

As a NYC Urban Park Ranger, Mr. Lynch began a program of propagation of native plants and a volunteer effort to rescue native plants from sites that could not be saved. In 1985, as the Greenbelt botanist, this program was expanded to create the Native Plant Center (NPC) at the William T. Davis Wildlife Refuge. The mission of the NPC was to continue field research on endangered native plants, to propagate restoration quantities of native plants, and to provide education to land planners about using native plant species and communities in reclamation efforts throughout the estuary. Originally located on a small site on the Eastern side of the wildlife refuge, Mr. Lynch identified, studied, and helped find funding to acquire the Mohlenhoff family farm on the Western edge of the refuge. Today, this 16 acre facility employs 19 full-time staff and produces many thousands of native plants annually (through the laudable efforts of the current director, Ed Toth).

As a founding member of the Sweetbay Magnolia Conservancy in 1996, Mr. Lynch has dedicated his efforts toward developing a better scientific understanding of the West Shore of Staten Island and to the protection of significant natural areas within the watershed. To date, the conservancy has been responsible for the acquisition and protection of hundreds of acres of natural areas and many dozens of endangered native plant and animal species. The most important of these acquisitions has been the protection of the Magnolia Swamp (a.k.a. the SI Corporate Park), where almost two dozen endangered native plant species have been re-discovered, including the Nantucket Juneberry and the "Staten Island" Juneberry (*Amelanchier Aquehongensis*), a newly-discovered plant that is only known to occur at the Magnolia Swamp. Other scientific work involves the development of a propagation protocol for the federally-endangered American Chaffseed (*Schwalbea americanum*), an obligately parasitic species that has been recalcitrant to propagation efforts until very recently. Preliminary efforts have been undertaken to perform field sampling for the occurrence of the American Burying Beetle, a federally-endangered species once known to occur on Staten Island. The conservancy hopes to create a breeding program for the species, leading to eventual field trials to re-establish the beetle into its historical range on Staten Island and the adjacent Arthur Kill Islands.

Though suffering the long-term consequences of Chronic Lyme Disease, Mr. Lynch remains dedicated to the protection of the natural resources of the Arthur Kill and to the establishment of a legal authority to protect natural areas and manage industrial sites within the watershed.

Brian Palestis

Brian Palestis is an Associate Professor of Biology at Wagner College and Chair of the Department of Biological Sciences. He earned his Ph.D. in Ecology and Evolution from Rutgers University in 2000 and has studied the behavior and ecology of common terns since 1996.

Matt Palmer

Matthew Palmer is a botanist and faculty member in the department of Ecology, Evolution, and Environmental Biology (E3B) at Columbia University. His research interests are rooted in plant community ecology, with particular emphases on restoration, conservation, and ecosystem function. He holds a B.S. in Natural Resources from Cornell University and a Ph.D. in Ecology and Evolution from Rutgers University.

Glenn Phillips

Glenn Phillips is the Executive Director of New York City Audubon, a grassroots conservation organization, dedicated to protecting birds and their habitat in New York City's five boroughs. Glenn has also served as Prospect Park's Vice President for Education, where he ran the Prospect Park Audubon Center, Lefferts Historic House and the Brooklyn Academy of Science and the Environment. At the New York Botanical Garden in the Bronx, Glenn helped develop the Everett Children's Adventure Garden, a hands-on outdoor museum.

Don Riepe

Don Riepe has been the NY Chapter Director of the American Littoral Society for the past 25 years and has been designated as "Jamaica Bay Guardian" by NYSDEC. He recently retired from the National Park Service where he worked as a naturalist and manager of the Jamaica Bay Wildlife Refuge in NYC. Don has written many articles on natural history subjects and his photographs have been published in many journals including *Scientific American*, *National Wildlife*, *Audubon*, *Defenders*, *Underwater Naturalist*, *Parade* and *The New York Times*. He has an M.S. in Natural Resources Management from the University of New Hampshire and has taught a course in Wildlife Management at St. John's University. Currently, he serves as a board member for NYC Audubon, NYC Sierra Club and the Rockaway Waterfront Alliance.

Kate Ruskin

Kate Ruskin is currently an undergraduate in Columbia University's Department of Ecology, Evolution, and Environmental Biology. She is researching behavioral health monitoring methods for Double-crested Cormorants in New York Harbor as a part of her senior thesis. Her future research interests include conservation medicine, coastal ecology, and of course, cormorants.

Stephanie Schmidt

Stephanie Schmidt has many years of experience administering conservation projects at Manomet Center for Conservation Sciences. Projects have included ecological- and contaminant-oriented work in Delaware Bay heronries, a contaminant study on Double-crested Cormorants in New York Harbor, and management of the Program for Regional and International Shorebird Monitoring (PRISM). She has received her M.S. in Environmental Toxicology from Texas Tech University and has a B.S. in Wildlife Biology from the University of California, Davis.

Jason Smith

Jason Smith holds a BFA in Creative Writing and Photography from the University of Southern Maine, an AAS in Fish & Wildlife Management from Paul Smiths College, and a BAS in Environmental Science from Paul Smiths College. While with the Upper Saranac Lake Foundation for four years, Jason served as a dive leader for underwater control of aquatic invasive species. For a year and a half, Jason has worked at the New York State Department of Environmental Conservation as an Ecologist and State Wildlife Grants Biologist.

Bill Tai

Bill Tai is Director of the Natural Resources Group at the New York City Department of Parks & Recreation. A native of New York, Mr. Tai attended the Bronx H.S. of Science and received undergraduate degrees in Geology and Engineering from Columbia University. He completed graduate studies in Geology at McGill University in Montreal and has worked on natural resource projects across the Western U.S. and Alaska as Senior Scientist and Project Manager. During almost twenty years in Alaska, Mr. Tai also worked as Senior Land Management Officer for one of the most successful of thirteen regional native corporations, with responsibility for more than one million acres of private landholdings. He was a Founding Member of the Board and later, Trustee of the Alaska State Parks Foundation.

Saleen Tennis

Saleen Tennis is a biologist working for the USDA Wildlife Services. She earned her BS at the University of Minnesota and her MS at Southern Illinois University. Most of her work has been research and management of Endangered and Threatened carnivore species. She has conducted research on wolves in northwestern MN and has worked as a Canada Lynx biologist for the Maine Dept of Inland Fisheries and Wildlife. Most recently she was working for the New Mexico Dept of Game and Fish as the field team leader for the Mexican Wolf Reintroduction Program in the southwest. Saleen's move to the New York area was based on her recent marriage and her husband accepting a position with the USFWS in the area. She is excited about her new position and is interested in learning about and becoming more involved in the wildlife research and management going on in the area.

Kim Tripp

Kim Tripp earned her BS at Cornell University and her MS at North Carolina State University. She has worked as an endangered species biologist for the U.S. Fish and Wildlife Service for 9 years. Throughout those years she worked very closely on the recovery efforts for the Piping Plover. For the past 5 years, Kim has been the Director and Research Coordinator of the Jamaica Bay Institute- a program hosted by Gateway NRA which identifies, supports, and shares research findings on park resources to encourage science based decision-making within Gateway and beyond park boundaries.

Nellie Tsipoura

Nellie Tsipoura is the Director of Citizen Science for the Research Department at New Jersey

Audubon Society, coordinating volunteer surveys of shorebirds during spring and fall migration, and landbirds in various New Jersey habitats, including grasslands managed through state and federal landowner incentive programs. She is also the primary investigator of NJAS research on avian communities and contaminant levels in birds in the New Jersey Meadowlands District, and recently completed a report on a two-year avian point count survey and another on metal contaminant levels on marsh birds.

She earned a Ph.D. from Rutgers University for work on ecophysiological and hormonal aspects of wintering and migration in shorebirds. She has over 20 years experience doing research on bird populations, including consulting work for NJ DEP with shorebirds in Delaware Bay, consulting work for the WCS with grassland birds in New York, and work for National Audubon Society on the Western Hemisphere Shorebird Reserve Network during its early stages.

Kelley Tucker

Kelley Tucker is the manager of eastern US and Canada programs for LightHawk, a non-profit aviation organization that donates flight resources to its conservation partners. She is currently based on the East End of Long Island. Before joining LightHawk, she was Vice President of Programs at the International Crane Foundation, guiding conservation efforts in 22 countries. She founded and directed the American Bird Conservancy's pesticides and birds program, has assisted with fieldwork on Swainson's Hawks in southwestern Minnesota, and served as a consultant to the Manomet Center for Conservation Sciences, the John D. and Catherine T. MacArthur Foundation, and the Joyce Foundation.

Chip Weseloh

Chip Weseloh is an advisor on Wildlife Toxicology for the Canadian Wildlife Service (CWS) - Ontario Region. He has worked on colonial waterbirds for 40 years and can trace his interest to a 3rd year undergraduate Ecology project. He completed an M.Sc. at Michigan Technological University on the effects of heron droppings on plant distribution within a breeding colony. For his Ph.D., he studied the urban ecology of gulls at Calgary, Alberta, where he individually colour-marked over 2500 Ring-billed Gulls. Following graduation, he became the first Curator of Ornithology at the Provincial Museum of Alberta in Edmonton. He began work for CWS in 1978 in Toronto and has been at the same job ever since. He directs two major long-term avian monitoring projects on the Great Lakes: The Herring Gull Egg Contaminants Monitoring project - an annual surveillance project for contaminants and their effects in gulls - and the Canadian portion of the Great Lakes Binational Colonial Waterbird Census - a decadal monitoring program that censuses all waterbird colonies on the Great Lakes. Both projects have been underway since the early 1970s. The former is the longest running annual contaminants monitoring program for birds in the world and is in its 33rd year. The latter includes a 57-year database on cormorant numbers on Lake Ontario. Chip is also an active birdwatcher, a co-founder and current co-editor of the Ontario Field Ornithologist.



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Stay Connected.....

...via the list serve for Harbor Herons, Cormorants, and other Colonial Waterbirds of the Greater New York Harbor.

If you are not already on the Colonial Waterbirds list serve, please contact Susan Elbin at elbin@wildlifetrust.org with a request to have your email address added to the list serve.

