NEW YORK CITY AUDUBON

HARBOR HERONS PROJECT

2007 Nesting Survey

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November 21, 2007

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CONTENTS

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ABSTRACT

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. This report summarizes wading bird, cormorant, and gull nesting activity at 17 islands and one mainland colony, and discusses population changes in New York/New Jersey Harbor since 2004. 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 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, while the developing colony at Mill Rock remained relatively stable. 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. Cormorants nested predominantly in Black Locust trees in most colonies, in Hackberry trees on Swinburne Island, and on built structures west of Shooter's Island. Herring and Great Black-backed gulls nested on islands throughout the harbor (2,656 and 796 nests, respectively) and Common Terns (8 nests) were found nesting at Little Egg Marsh

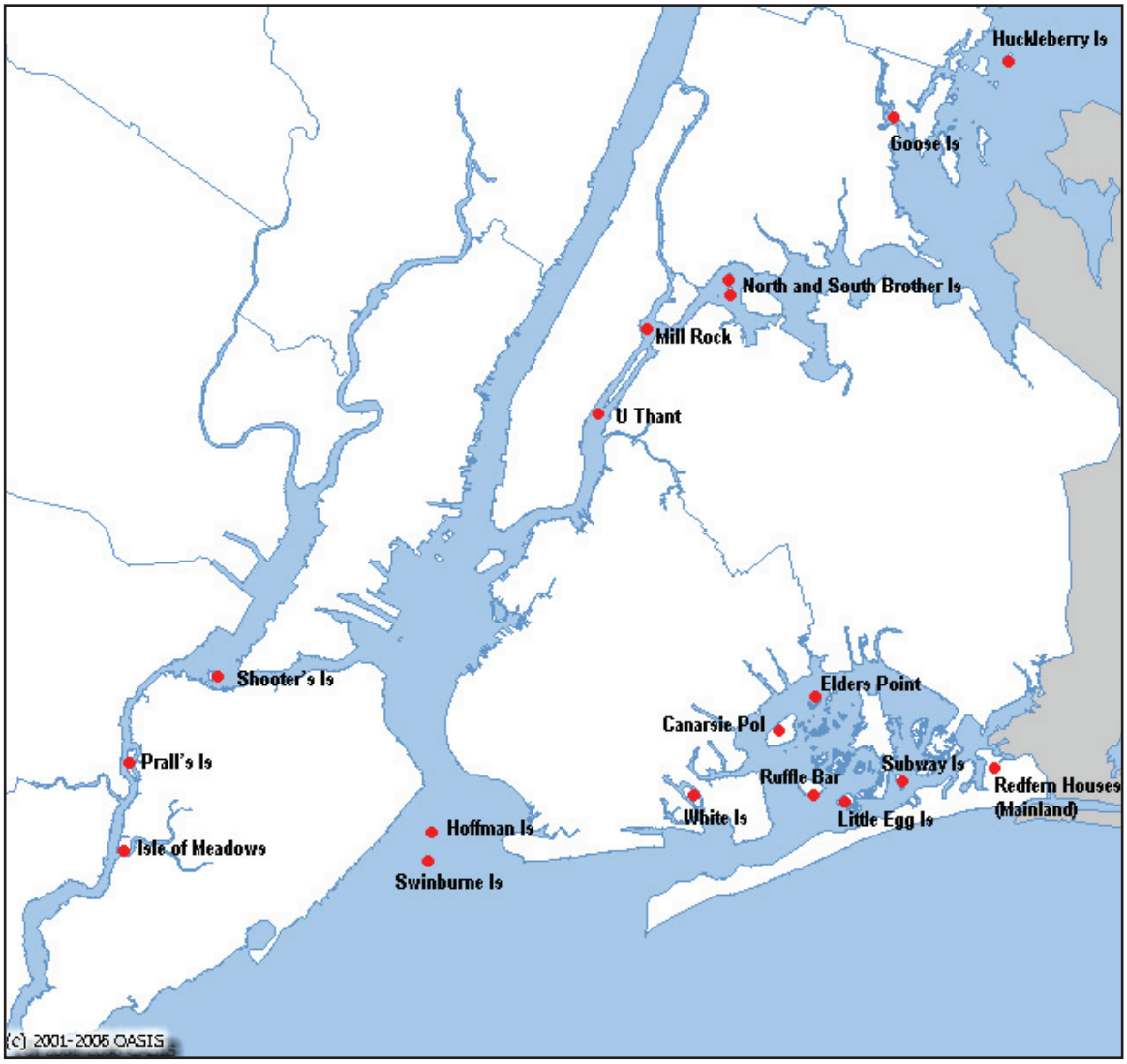


FIGURE 1: Islands surveyed for wading birds, cormorants, and gulls in NY/NJ Harbor and surrounding waterways, 2007. See text for details of colony status and species composition. Map modified by author from OasisNYC.

INTRODUCTION

New York City Audubon's Harbor Herons Project nesting survey of 17 islands in New York/New Jersey Harbor and surrounding waterways was conducted from 17 May to 3 June 2007. The primary objectives of the 2007 survey were to: (1) monitor the population status of wading birds (i.e., herons, egrets and ibis), cormorants, and gulls on islands and surrounding waterways; (2) document nesting habitat, including trees, shrubs, and vines used by nesting wading birds and cormorants; and (3) record the presence of other important nesting or migratory bird species, and common flora, on an opportunistic basis.

Islands surveyed (Table 1, Figure 1) in 2007 included three in the Arthur Kill-Kill Van Kull complex (Shooter's and Prall's islands, and Isle of Meadows); two in Lower New York Harbor (Hoffman and Swinburne islands); four in the East River/Western Long Island Sound area (U Thant, Mill Rock, and North and South Brother islands); six in Jamaica Bay (White Island, Canarsie Pol, Ruffle Bar, Elders Point (East and West), Little Egg Marsh, and Subway Island); and two in the Hutchinson River/Long Island Sound area (Goose and Huckleberry islands).

These islands were surveyed by a research team consisting of the author, volunteers from NYC Audubon (NYCA) and other organizations, and staff from New York City Department of Parks and Recreation-Natural Resources Group (NYCDPR-NRG) and the National Park Service (NPS). Double-crested Cormorant counts were conducted jointly with Dr. Susan Elbin and a team from Wildlife Trust, CUNY-Queens College, and Columbia University as part of an ongoing study of cormorant population dynamics, habitat use, and foraging ecology. Surveys at Goose and Huckleberry islands were conducted jointly with David Künstler (NYCDPR, Van Cortlandt & Pelham Bay Parks Administrators' Office; see Künstler 2007, 2007a). Dr. George Frame (NPS) provided information on Elders Point East, and Don Riepe and members of Wildlife Trust offered information on cormorant nesting at Elders Point West.

In Fall 2004, NYCA shifted the Harbor Herons Project Nesting Survey from an annual to a triennial schedule, and this report presents species and island accounts for 2007 activity with reference to changes in nesting activity over this three-year period. Monitoring wading bird and cormorant nesting populations in NY/NJ Harbor provides both an estimate of the relative health and stability of local colonial waterbird populations, and a valuable indicator of the overall health of the region's natural resources.

2007 Nesting Survey

METHODS

The 2007 survey followed field methods designed for previous Harbor Herons Project nesting surveys [Dr. Katherine Parsons (1986-1995), Dr. Paul Kerlinger (1996-2004)] and the standard protocol of the New York State Department of Environmental Conservation's Long Island Colonial Waterbird and Piping Plover Survey (LICW). All counts between 6:20AM and 3:35PM, and under clear conditions without rainfall, high winds (>8 knots), or temperatures above 80°F. Most counts were conducted once from 17-31 May 2007, with the exception of White Island (conducted 2 June 2007 by helicopter), Little Egg Marsh (conducted 3 June 2007), and Elders Point West (30 July 2007, after a late-season discovery of nesting cormorants).

Wading bird surveys were conducted by one or two teams of researchers, who quickly and systematically searched for nests on each island, initially focusing effort on areas occupied by nesting birds in previous years. Depending on the colony size, each team included approximately two counters (i.e. one person using a telescopic mirror pole to examine contents of nests up to five meters from the ground, and another to record data), and from one to three spotters, who moved slightly ahead to direct the counters to nests, and keep multiple teams from re-sampling the same nests. A nest was deemed active if it contained eggs or young, if there was evidence of recent construction (e.g. fresh twigs or vegetation in nest) or use (e.g. a layer of fresh feces underneath a nest), or by direct observation of adults on or within one meter of a nest with the above characteristics. Whenever possible, nests were identified to species by the young, eggs, or nest structure. Nests beyond the reach of the mirror pole were examined with binoculars. If nest contents could still not be confirmed, but other evidence suggested recent activity (e.g. feces, new nest construction), nesting species was noted as 'unknown'. Additionally, old or unused nests were noted in the count as 'empty', but not included in the final tally of active nests.

Double-crested Cormorant surveys were conducted by direct observation within colonies (as detailed above), with the exception of Shooter's and U Thant islands, where nests were counted with binoculars from a boat no more than 20 meters

away from the colony. These surveys were conducted with the assistance of Dr. Susan Elbin, Elizabeth Craig, and a team from Wildlife Trust.

Great Black-backed and Herring gull nesting was estimated from adult counts, rather than exhaustive nest searches, due to time constraints. When adults were counted in the vicinity of certain colonies, a nest was assumed present for each adult seen, as one-half of adults are assumed to be foraging away from the nesting colony during daytime (see NYSDEC-LICW protocol; Kerlinger 2004).

Nesting vegetation (i.e., tree, shrub, or vine species) was recorded whenever possible with the assistance of experienced botanists from NYCDPR-NRG, NPS, and NYCA. In an attempt to describe island flora, vegetation present (i.e., ferns, grasses, forbs) was also recorded on an opportunistic basis by botanists present on the surveys. The resulting plant lists are by no means exhaustive, although methods will be developed for future surveys to establish a standardized, rapid assessment of vegetation.

TRANSPORTATION AND PERMITS

Boat access to islands was provided by Captain Jerry Woerner of ConocoPhillips-Bayway Refinery's Oil Spill Response Team; Alexander Summers of the New York City Department of Parks and Recreation-Natural Resources Group; Dr. Susan Elbin of Wildlife Trust; Don Riepe of the American Littoral Society/Jamaica Bay Guardian; Chris Olijnyk, Steve Schiffer and Tom O'Connell of the National Park Service; John Burke of the Huckleberry Indians; and Tony Archino, Trevor Harris and Adam Green of Rocking The Boat. NYCA and the author express sincere appreciation to these organizations and individuals for their time, fuel, and vessels.

Permits were issued by the NYCDPR-NRG and the NPS to conduct surveys on protected islands under city and federal jurisdiction, and permission to access the privately-owned Huckleberry Island was offered by the Huckleberry Indians. The author wishes to thank Ellen Pehek and Michael Feller of NYCDPR-NRG, George Frame of NPS, Kim Tripp and Jessica Browning of NPS-Jamaica Bay Institute, and Gerry Padian and Peter Cella of the Huckleberry Indians for assistance during the permitting process.

RESULTS

For the 17 islands visited, 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, Green Heron, Tricolored Heron, and Cattle Egret) were confirmed as breeders on 10 islands (Tables 2&3). An additional 85 nests were not identified to species.

This represents a slight overall increase (+7%) in wading bird nesting in NY/NJ Harbor from 2004, as well as an increase in the number of islands where nesting was observed (from 7 to 10 islands). The islands where wading bird nesting had not been detected in 2004, such as Swinburne Island, Subway Island, and possibly Elders Point West, supported few nests. Certain islands with declining trends in previous years (i.e., Huckleberry Island, North Brother Island) showed an apparent decline in nesting activity in 2007.

For the 17 islands visited, a total of 1,846 nests of nine species of wading birds were confirmed as breeders on 10 islands

Colonial waterbird nesting on Huckleberry Island has continued to decline over the past decade, and the island mainly supported Double-crested Cormorants and only 6 wading bird nests (-79% since 2004). Goose Island continues to support reduced numbers of wading bird nests, with a 27% reduction in overall nesting activity since 2004. Mammalian predators (i.e., Raccoon and Virginia Opossum) may be contributing to the recent reduction in nesting activity.

In the East River area, Black-crowned Night-Heron nesting activity sharply declined North Brother Island (-85%), the lowest point in a five-year reduction of nesting there. The Black-crowned Night-Heron colony at Mill Rock remained relatively stable. Great Egrets were confirmed as nesters on Mill Rock for the first time since the origin of the colony in 2003. South Brother Island was the largest wading bird colony in NY/NJ Harbor 2007 (592 nests).

In the Staten Island area, no wading bird nesting activity was noted on islands in the Arthur Kill/Kill Van Kull complex (Isle of Meadows, Prall's Island, and Shooter's Island), where the core of NY/NJ Harbor area wading bird reproduction occurred from the 1970's through the late 1990's. In recent years, periodic Black-crowned and Yellow-crowned Night-Heron nesting attempts have been noted in dense areas of Gray Birch on the northern end of Prall's Island; efforts to control Asian Longhorned Beetle (ALB) populations on the island in March-April 2007, however, resulted in the removal of most suitable nesting trees. Adult White-tailed Deer were observed on both Isle of Meadows and Prall's Island, were they have also reproduced (Bernick 2006).

In Jamaica Bay, Canarsie Pol was surveyed by both ground-based perimeter counts and aerial surveys to account for difficulties in ground-based surveys due to thick vegetation. Total wading bird nesting at Canarsie Pol in 2007 (533 nests)

was similar to 2004 levels (544 nests), although there were more Great Egrets noted and fewer Glossy Ibis. Ruffle Bar showed no evidence of successful colonial waterbird nesting; the few gull nests that were located in the former core of the colony had been preyed upon, likely by Raccoons known to inhabit the island.

Subway Island, Little Egg, Elders Point East, and White Island were predominantly gull-nesting islands. However, two partially constructed Black-crowned Night-Heron nests with attending adults were observed on Subway Island, and a possible Great Egret nest was noted on Elders Point West.

Nesting decreases were noted for Glossy Ibis and Black-crowned Night Heron

Nesting increases since 2004 were observed for Great and Snowy egrets, Yellow-crowned Night-Herons, and Little Blue Herons in NY/NJ Harbor. Great and Snowy egret populations increased +36% and +22%, respectively. Yellow-crowned Night-Heron populations showed an apparent increase (+50%) on islands; with the additional mainland nesting, their population is at a peak in NY/NJ Harbor since the beginning of the Harbor Herons Project. Little Blue Herons showed a slight increase in nesting (+21%), although they nest in fairly low densities in the Harbor.

Nesting decreases were noted for Glossy Ibis and Black-crowned Night-Herons. A sharp decline in Glossy Ibis nesting was observed in the Harbor (-27%), a five-year low for this species. Black-crowned Night-Herons remain the numerically dominant nesting species in the Harbor, although they exhibited a slight decrease (-5%) in nesting since 2004, and a six-year low.

Tricolored Herons continue to nest in low densities (on only one island (Canarsie Pol). Cattle Egrets were rarely encountered within nesting colonies, and appear to have largely abandoned the NY/NJ Harbor area. Green Herons were rarely located during island surveys; the harbor-wide population of Green Herons is underestimated by these surveys.

For islands where wading bird populations have declined due to several potential changes in suitability (i.e., habitat, increased human disturbance, predation, chronic effects of contaminants), weather may have caused a reduction in early season nesting activity within NY/NJ Harbor. Severe weather conditions occurred in the New York City area in mid-April 2007, specifically a northeaster causing heavy rains (~7.5 inches recorded in Central Park from 14-15 April) and strong winds. As these storms occurred during the early nesting season, wading birds may have abandoned or delayed nesting attempts, resulting in the observed patterns of reduced nesting noted on several islands throughout the region (i.e., North Brother Island).

A total of 1,046 Double-crested Cormorant nests were observed on seven islands (Huckleberry, U Thant, Hoffman, South Brother, Shooter's, and Swinburne islands and Elders Point Marsh West; Tables 2&4). While their populations have shown an apparent increase since 2004, they have decreased slightly (-11%) since 2006. No evidence of nesting was found

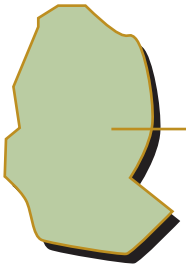
on channel markers surveyed in the harbor. Harbor-wide population trends for Double-crested Cormorants are not easily described from a comparison of nest numbers. For instance, nesting "increases" at one colony (Swinburne Island) were likely due in part to a change in survey method (on shore vs. by boat), and a late season count where nests were obscured by vegetation. On Hoffman Island, increases have been well-described since nesting was first observed on the island, although the pace of nesting on the island may be slowing as there was no growth noted in 2007. An analysis of Double-crested Cormorant population trends in NY/NJ Harbor is pending (Elbin and Bernick in prep).

Herring and Great Black-backed gull trends were also not easily determined from Harbor Herons Project data, as other organizations have traditionally surveyed gulls at the largest colonies in the Harbor (Canarsie Pol and Subway Island, and Ruffle Bar prior to its decline). Additionally, the intensive nest searches necessary to gather comprehensive data on gull populations in some of the larger colonies have not been the technique used in the Harbor Herons Project, where adults within or flushed from colonies are used to estimate nest numbers. An analysis of gull population trends in NY/NJ Harbor will be presented in a future report. However, overall nesting on most islands was slightly higher in 2007 for both species than in 2004 (Tables 2&5), perhaps due to increased search effort. Gulls will be discussed in the Species Account section below.

Common Terns were found to nest on bare sand upland areas at Little Egg Marsh, one of the first times this species has been detected on islands surveyed for the Harbor Herons Project. The core nesting area for this species in NY/NJ Harbor is likely Breezy Point Co-op, where 1,000's of birds have nested in recent years.

ISLAND ACCOUNTS

Long Island Sound — Pelham New Rochelle, Westchester



Huckleberry Island

25 May 2007, 10:35AM-12:25PM

With David Künstler, Alexander Summers, Camille Joseph, Colin Grubel, Susan Elbin, Elizabeth Craig, Kate Ruskin, and John Burke (Huckleberry Indians).

Wading bird nest counts revealed 6 heron and egret nests of two species (Table 2), a 79% decline since 2004. The number of Double-crested Cormorant nests have dropped since 2004 (-25%; Table 4), and numbers of both Herring and Great Black-backed gulls nest numbers continue to fluctuate among years (Table 5). At least 2 pairs of nesting American Oystercatchers have been present in previous years; while adults were present on the island,

no nests were located during the survey. Canada Goose nesting was similar to previous levels (9 nests).

Wading birds nests were located in the center of the island within Norway Maple, Black Cherry, and Multiflora Rose (Table 6). As suitable nesting habitat exists within the central and western sections of the island, other factors are likely causing the observed declines. Human activity during the breeding season would be an expected source of disturbance. Authorized use of the island by the property owners appears to be limited in recent years (J. Burke, Huckleberry Indians, pers.comm.); unauthorized visitation, however, is another source of human disturbance that may escape detection. Double-crested Cormorants are found nesting in the eastern section of the island, which was formerly populated by herons and egrets. Competition for nesting sites between wading birds and cormorants may be a factor in observed wading bird declines, although cormorant numbers have also decline on this island.

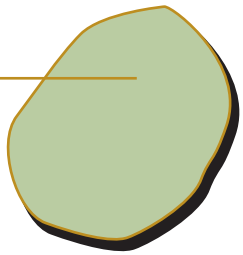
Green Herons were rarely located during island surveys

Due to an overall decline in wading bird nesting over the past five years, and the recent cormorant declines exhibited on Huckleberry Island, it is critical to continue monitoring activities. NYCA, Wildlife Trust, and NYCDPR-NRG will work closely with the Huckleberry Indians to insure necessary researcher access to this island, and to establish potential factors contributing to this decline. Huckleberry Island has been a critical nesting site for both wading birds and cormorants in the NYC area, and may return to a similar state in the future. For a more detailed treatment of the islands' bird population and available habitat, see Künstler (2007a).

Vegetation noted on the island during opportunistic surveys is noted in Tables 9-11. No trends or overall habitat designations were determined from species observed, although more detailed data for Huckleberry Island is available (D. Künstler, NYCDPR, pers. comm.).

East River, Hutchinson River and Long Island Sound

Goose Island



24 May 2007, 11:15AM-12:50PM

With David Künstler, Alexander Summers, and Michael Feller

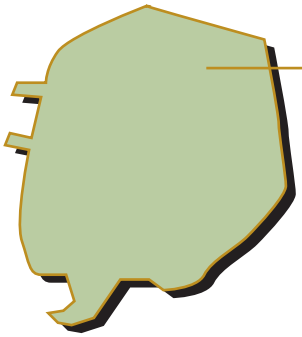
Goose Island held fewer wading bird nests (86 nests, -32%) than in 2004, and a single Great Black-backed Gull nest was present. There were 13 Canada Goose nests observed, one American Black Duck nest, and two Fish Crow adults. Black-crowned Night-Heron, Great Egret, and Snowy Egret nests were observed, although some species observed in small numbers in the past (i.e., Yellow-crowned Night-Heron, Glossy Ibis, Little Blue Heron) were not present.

FIGURE 2: Nest camera on Goose Island, 24 May 2007. The 'HeronCam', a joint project of NYCA and NYCDPR, offered video of nesting wading birds via NYCA's website, and was also used by NYCA volunteers to monitor several Great Egret nests through the nesting season. Photo: © A. Bernick.

Kerlinger (2004) suggested that the 127 nests observed during the 2004 surveys may be the maximum that the island could support, due to a limited number of suitable nesting trees and shrubs. Two mammal species were noted on Goose Island in winter/spring 2007 (Raccoon and Virginia Opossum); evidence of egg and nestling predation and the presence of one Raccoon during the Harbor Herons surveys suggests that mammalian predation may be playing a role in the observed decline. Detailed information on wader nesting and nest productivity on Goose Island may be found in Künstler (2007b). Vegetation noted on the island during opportunistic surveys is noted in Tables 9-11. No trends or overall habitat designations were determined from species observed, although more detailed data for Goose Island is available (D. Künstler, NYCDPR, pers. comm.).

In a joint project between NYCA and NYCDPR, a 'HeronCam' (Figure 2) was activated on the center of Goose Island in April 2007, and was available for public viewing via NYCA's Harbor Herons website. This camera was also used by volunteers to observe the progress of 10 Great Egret nests over the breeding season (Figure 3). While the results of these observations were not available for inclusion in this report, they will be used to plan a more substantial volunteer observer program in spring/summer 2008. As it was difficult to assess productivity of wading birds via nestcam observation, due to the limited number of observable nests and the growth of vegetation obscuring reliable observation, other methods to quantitatively assess productivity will be explored in future seasons.

East River



North Brother Island

17 May 2007, 10:00-11:10AM

With Alexander Summers, Michael Feller, Elizabeth Craig, David Marshall, and Jessica Schnell.

A total of 13 active Black-crowned Night-Heron nests were located on the island, and an additional 2 nests of unknown status. This represents an 85% decrease in Black-crowned Night-Heron nesting on North Brother from 2006, though increases for this species were observed in two nearby colonies (Mill Rock and South Brother Island). At the time of this survey, most nests contained one to three eggs, with ~2-3 day old nestlings noted in two nests; in recent years, nests typically have had more hatchlings present in nests, suggesting that older chicks would be expected by May (Bernick 2006). Based on adults present, an estimated 72 Herring and 9 Great Black-backed gulls nested on the island.

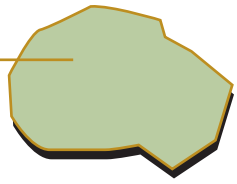
Inclement weather, including heavy rains (~7.5 inches recorded in Central Park from 14-15 April, NOAA Weather Data 2007) and strong winds, occurred during the early nesting season, wading birds may have abandoned or delayed nesting attempts, resulting in the observed patterns of reduced nesting noted on several islands throughout the region (i.e., North Brother Island). Periods of cold temperatures, strong winds and heavy rains have been shown to have a disruptive influence on wading bird nesting chronology (Frederick and Loftus 1993, Parsons 1985).

Black-crowned Night-Heron breeding activity was limited to the southern edge of the island, in the following nesting vegetation: 1) Asiatic Bittersweet and other vines tangled around collapsing structures, chain-link fences, and trees; 2) underneath Black Cherry, White Mulberry, and Crabapple completely covered by mats of Asiatic Bittersweet, and 3) Black Cherry and White Mulberry unencumbered by vines (Table 6). Vegetation noted on the island during opportunistic surveys is noted in Tables 9-11. No trends or overall habitat designations were determined from species observed.

A major habitat restoration project was undertaken by NYC Department of Parks and Recreation in winter and early spring of 2005 and 2006, which involved the removal of mature stands of Norway Maples, planting of native tree and shrub species favored by nesting wading birds, and the eradication of a kudzu population present on the island (M. Feller, NYCDPR-NRG, pers.comm.). Future plans to manage other introduced vine species prevalent on the island (e.g., Asiatic Bittersweet, Porcelainberry) are being considered by NYCDPR-NRG, and NYCA is collaborating in this discussion to ensure these plans would not substantially impact nesting wading bird populations present on the island.

FIGURE 3: Images captured from the Goose Island 'HeronCam'. Top: Earliest Great Egret egg observed on Goose Island, 13 April 2007. Bottom: A pair of Great Egrets displaying on Goose Island, 14 May 2007. Three young hatched from this nest by mid-June.

South Brother Island



22 May 2007, 9:10-11:10AM

With Michael Feller, Elizabeth Craig, Susan Elbin, Colin Grubel, Kate Ruskin, Glenn Phillips, Yigal Gelb, Anthony Archino, and Trevor Harris.

A total of 592 nests of five wading bird species (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, and Cattle Egret; see Table 2), including 22 unidentified wader nests, were noted throughout the island. This represents a 36% increase over activity in 2004. Double-crested Cormorants (271 nests) primarily occupied, the center and northeastern areas of the colony. Nests on South Brother had both more eggs and older nestlings than the few nests found on North Brother. While detailed nest content data was not collected on South Brother Island in 2007, most nests contained younger nestlings and more unhatched eggs than observed in 2006. This suggests some delay in nesting chronology, perhaps due to weather early in the nest-

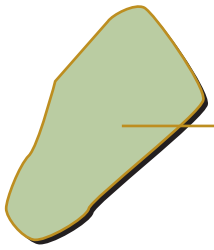
ing season (see discussion for North Brother). Based on adults present, an estimated 123 Herring and 93 Great Black-backed gulls nested on the island.

Wading birds nested in 10 species of trees and shrubs on South Brother, as well as tree/shrub/vine arrangements (Table 7). Black-crowned Night-Herons nested predominantly in Black Cherry, Mulberry species, and Box Elder, whether or not the trees were encumbered with Asiatic Bittersweet. Snowy Egrets nested more often in tangles of Multiflora Rose and Asiatic Bittersweet 10.5

Egrets nested mainly in vine-encumbered trees, generally using the vines as a platform on which to construct nests. Nesting habitat for cormorants on South Brother included a stand of locust trees (in the center of the colony, where the majority of nests are located), as well as White Mulberry, Black Cherry, and other tree species covered with Asiatic Bittersweet also preferred by wading birds. Vegetation noted on the island during opportunistic surveys is noted in Tables 9-11. No trends or overall habitat designations were determined from species observed.

A potential concern is that one of the prevalent tree species used by nesting wading birds, Box Elder, is also a host tree preferred by Asian Longhorned Beetles (ALBs). If ALBs were detected on South Brother, the current management plan calls for a complete cut of all potential ALB host trees within the area. This could have a devastating effect on the persistence of the colony; it is important to establish preventative measures to reduce the chance of this occurring (i.e., early detection surveys, training of Harbor Herons volunteer teams, chemical treatment) with USDA-APHIS and other organizations within the ALB Cooperative Eradication Team.

The purchase of South Brother Island, which is currently the largest wading bird colony in NY/NJ Harbor, was coordinated in 2007 by Trust for Public Land, Wildlife Conservation Society, The Point Community Development Corporation, and Congressman Serrano (16th Congressional District, Bronx. NY); the island was officially transferred to NYCDPR in November 2007. The purchase of one of the last privately owned islands in NY/NJ Harbor used by nesting colonial waterbirds is a tremendous success, and NYCA will continue to advocate for maintaining the island as a refuge for nesting colonial waterbirds.



Mill Rock

17 May 2007, 8:40-9:20AM

With David Marshall, Jessica Schnell, and Elizabeth Craig

A total of 39 Black-crowned Night-Heron nests and three unknown nests were located in the main body of Mill Rock. The narrow southern spur did not support any nests. Evidence of Black-crowned Night-Heron nesting was first ob-

served by the author in 2003 and confirmed in 2005. In May 2006, Great Egret adults were observed on the east side of Mill Rock, although no nesting was found during the survey. In 2007, one Great Egret nest was confirmed.

This represents a slight decline in nesting activity over 2006; poor weather conditions in mid-April could account for the reduced activity, as noted for North Brother Island. Based on adults present, an estimated 90 Herring and 20 Great Black-backed gulls nested on the island.

Wading birds nested primarily in mulberry trees, with four nests in young Norway Maple (8-10 inches in diameter at breast height [dbh], Table 6). The island, while offering a limited number of nesting trees, does have numerous unoccupied trees that would support an increase in the colony. Vegetation noted on the island during opportunistic surveys is noted in Tables 9-11. No trends or overall habitat designations were determined from species observed.

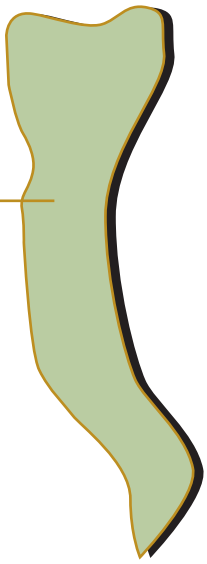
U Thant

17 May 2007, 9:00-9:15AM

By Alexander Summers and Elizabeth Craig

This island was surveyed from a boat with binoculars, approximately 10 meters from shore. A total of 24 Double-crested Cormorant nests were observed on the island largely on a metal arch sculpture, with the remaining nests in defoliated trees. Based on adults present, an estimated 75 Herring and 18 Great Black-backed gulls nested on the island. Vegetation noted on the island from boat is noted in Tables 9-11. No trends or overall habitat designations were determined from the species observed.

Staten Island – Arthur Kill and Kill Van Kull



Prall's Island

18 May 2007, 10:05-11:20AM

With Alexander Summers, Elizabeth Craig, Colin Grubel, Camille Joseph, Jessica Schnell, and Brendan Gilmartin

One team searched the entire island for nests in former nesting areas and areas where adults were observed roosting during the 2004 and 2005 surveys (i.e. Phragmites stands on the southern tip). There was no sign of wading bird, cormorant, or nesting during this survey, and no empty, inactive nests were located; the island had been cleared of most suitable nesting tree species (Figure 4). Other observations included on the

FIGURE 4: NYCA Harbor Herons Project volunteers assist on a survey of Prall's Island, 18 May 2007. Asian Longhorned Beetles (ALBs) were observed on the island in March 2007; a subsequent cut by the ALB Cooperative Eradication Team (USDA-APHIS, NYSDEC, and other organizations) removed gray birches and red maples formerly used by nesting wading birds. Photo: © A. Bernick.

island two Gadwall nests, one Boat-tailed Grackle adult, and one Glossy Ibis adult feeding along the eastern shore of Prall's Island. An osprey platform located near the end of River Road on Staten Island was active, with two adults in the vicinity of the nest. Evidence of continued use of the island by White-tailed Deer was apparent. Vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed.

In early March 2007, researchers from the United States Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS) detected Asian Longhorned Beetles (ALBs) in over 40 gray birches and several red maples on Prall's Island. ALBs are native to China, and were first observed in NYC in 1998. They use trees for egg-laying and development, and are found in a variety of native tree species in the NY/NJ Harbor area.

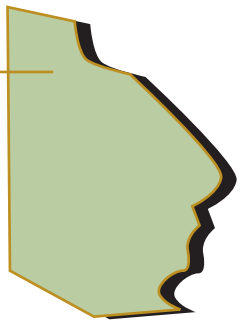
In response to ALB presence on Prall's Island, the NY-NJ ALB Cooperative Eradication Program (involving USDA-APHIS, New York State's Department of Environmental Conservation, New York State Division of Agriculture and Markets, and NYCDPR) cut and chipped ~3,000 potential host trees on Prall's Island in March/April 2007. Additional mainland surveys identified ALBs in a silver maple at nearby Old Place and Saw Mill Creek, where ~8,000 potential host trees have been removed since June 2007.

These removals are examples of the standard ALB management approach, where all potential ALB host trees are cut within a 0.5 mile area surrounding "infested" trees. A clear conservation concern of this management protocol is the potential for loss of wading bird nesting habitat in NY/NJ Harbor. Wading birds require trees for nest-building and nest material; unfortunately, the list of preferred nesting trees overlaps widely with preferred ALB host trees (USDA-APHIS 2005). For instance, gray birch has been an important tree species for nesting wading birds on Prall's Island and other colonies, and their removal greatly reduces the chance that wading birds will nest there in the near future. If ALBs are discovered on other nesting islands, the present management strategy could have serious impacts on wading bird breeding populations in NY/NJ Harbor.

Various organizations, including the NY-NJ Harbor Estuary Program's Harbor Herons Subcommittee, are working closely with the management team to develop workable plans for habitat restoration and preventative management strategies to reduce impacts on nesting wading birds at island-colonies where ALBs have not been identified. In a meeting held on Novermber 2, 2007 at the Hudson River Foundation, numerous governmental and non-governmental agencies and conservation organizations discussed practical approaches to identifying ALBs on sensitive island colonies, approaches to managing ALB populations in the NY/NJ Harbor area, and funding opportunities for restoration on islands and mainland natural areas where

tree removal has occurred.. A sensible first step will be to train Harbor Herons Project volunteers to recognize signs of ALB presence (i.e., oviposition sites, exit holes); this is advised for the 2008 surveys. Current conditions also present a unique opportunity for the restoration of native communities on Prall's, and NYCDPR-NRG is currently exploring restoration options.

Shooter's Island



18 May 2007, 11:45AM-1:15PM

With Alexander Summers, Elizabeth Craig, Colin Grubel, Camille Joseph, Jessica Schnell, and Brendan Gilmartin

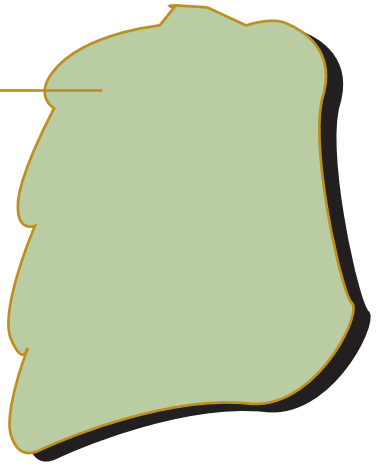
No wading birds were observed in the interior of Shooter's Island, which seems to have habitat suitable for wading birds (Figure 5), or around the island perimeter when surveyed by boat. Vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed. There continues to be no sign of recent human activity at the former encampment near the south side of Shooter's Island.

Figure 5: NYCDPR botanist Camille Joseph assisting with plant identification at Shooter's Island, 18 May 2007. This year's survey included a habitat component, focusing primarily on tree and vine species used by nesting waders, and common herbaceous plants on each island. Photo: © A. Bernick.

The Double-crested Cormorant colony situated on dry docks and other wreckage west of Shooter's Island yielded 41 active nests in 2007, which was equivalent to nesting in 2004, but a slight decrease from 2006 (Table 4). No nests were observed on the nearby channel marker (Marker 18, Kill Van Kull). Six Herring Gull nests were observed on the dry docks to the west of the island.

Additional species observed on Shooter's Island included Spotted Sandpiper (4 adults), one Gadwall nest, two Mallard nests, 2 Canada Goose nests, Yellow-billed Cuckoo (likely nesting), and several migrant songbirds (i.e., Black-and White Warbler, Black-throated Blue Warbler, Myrtle Warbler, and American Redstart). Two active Osprey nests were observed within the vicinity of Shooter's; one on pilings at the east end of the island, the sixth year it has been present, and one constructed on an old boiler close to the mainland, southwest of Shooter's Island. A second nest was observed closer to the mainland (A. Summers, NYCDPR-NRG, pers.comm.), after the publication of the 2006 survey report.

Isle of Meadows



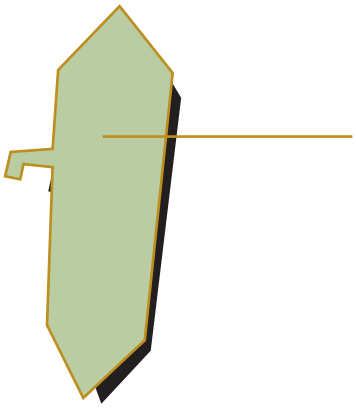
18 May 2007, 8:40-9:50AM

With Alexander Summers, Elizabeth Craig, Colin Grubel, Camille Joseph, Jessica Schnell, and Brendan Gilmartin

Former colony areas within the island interior were searched, as well as potential nesting areas on the northern section of the island formerly utilized by nesting gulls. No wading birds, cormorants, or gulls were observed, nor were there any nests that looked recently active. Vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed.

As on Prall's Island, White-tailed Deer evidence was observed on Isle of Meadows. Populations of White-tailed Deer have been noted on Staten Island for many years, but breeding activity on islands in the Arthur Kill is likely a more recent development. As noted in 2006, a large stick nest was discovered near the edge of the formerly active part of the colony, in a mature Black Cherry. Two Red-tailed Hawks occupied the nest, and we confirmed the presence of at least two nestlings being fed by one adult.

Based on the forest communities present on the island, largely composed of gray birch and maples, and its proximity to an area known to support Asian Longhorned Beetles (ALBs), the island is at risk for possible ALB "infestation". While USDA-APHIS conducted surveys in May 2007 and detected no ALBs on Isle of Meadows, the island should be carefully monitored in future years. The loss of wading bird nesting habitat on two islands within the Arthur Kill would be greatly detrimental to the future use of the area by wading birds.



Hoffman Island

21 May 2007, 11:20AM-1:20PM

With Susan Elbin, Kate Ruskin, Elizabeth Craig, Colin Grubel, Alexander Summers, and Howie Fischer

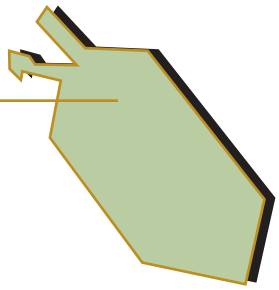
The last complete wading bird surveys of Hoffman Island occurred in 2004. This year, 567 nests of seven wading bird species were noted on the island, a slight increase over 2004 (500 nests). Nesters included Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Yellow-crowned Night-Heron, Little Blue Heron, and Green Heron. No Cattle Egrets were observed on the island. Based on adults present, an estimated 46 Herring and 142 Great Black-backed gulls nested on the island.

Vegetation containing wading bird nests included Black Cherry, Mulberry species, Multiflora Rose, Privet, Box Elder, and large masses of Asiatic Bittersweet (404 nests, Table 8). Wading birds also nested in various tree/bittersweet and tree/ rose arrangements (126 nests, Table 8). Eleven Black-crowned Night-Heron nests were located in Tree-of-Heaven/Asiatic Bittersweet arrangements; this tree is not typically known to support nesting, although the additional structure provided by vines increases its suitability. Vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed.

Double-crested Cormorant nests on Hoffman Island were mainly located in ~10-20 meters up in Black Locust trees, which have not been previously used as nesting trees by wading birds. From 2003 to 2006, Double-crested Cormorant nesting expanded across the southern end of the island; in 2007, a slight decrease in the number of nests was noted. Cormorant nests were in close proximity to wading bird nests in some locations, they did not seem to be directly competing for nesting sites at the present

time. This relationship will be closely monitored by Wildlife Trust as part of their NY Bioscape Initiative study.

Interestingly, a Western Reef-Heron was located by Alex Wilson at Dreier-Offerman/Calvert Vaux Park in the Coney Island section of Brooklyn on 8 July 2007. The bird was subsequently observed between July and August 2007 at the original observation spot in Coney Island, at South Beach and Great Kills Park on Staten Island, and at Sandy Hook in New Jersey. Several observers speculated on the likelihood to the bird using Hoffman Island as a central roost spot, from which it would move to various foraging locations; this is a reasonable, based on the wide spread of observations around Lower NY Harbor and Raritan Bay . While the species was not observed during the May nesting surveys, volunteers do search for rare wading bird species that might be present during the nesting season.



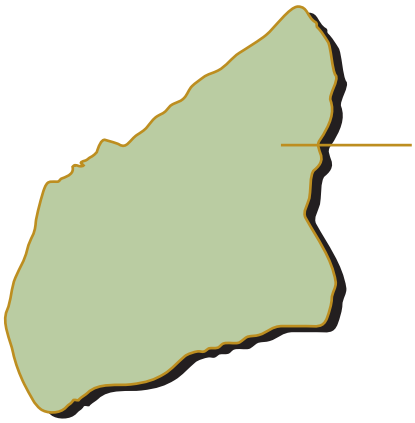
Swinburne Island

21 May 2007, 1:55-3:35PM

With Susan Elbin, Kate Ruskin, Elizabeth Craig, Colin Grubel, Alexander Summers, and Howie Fischer

Ground surveys for cormorants were employed to estimate nest numbers, and nesting trees were temporary marked with flagging to avoid resampling. A total of 264 cormorant nests were observed on Swinburne Island, and increase since 2004. However, this increase is likely due to a change in survey protocol (see Bernick 2006). Nests were located on structures that remain on the island, and in several hackberry trees. One Black-crowned Night-Heron observed nesting in a mulberry tree on Swinburne Island (table 6). Based on adults present, an estimated 198 Herring and 112 Great Black-backed gulls nested on the island.

In summer 2007, color-banding of Double-crested Cormorant nestlings on Swinburne Island was conducted by Wildlife Trust. If any orange leg bands with black writing (letter-number) are noted in the NY/NJ Harbor, please contact Dr. Susan Elbin (elbin@wildlifetrust.org) with the leg band code, location, date, and name of observer. Additionally, behavioral observations of nestlings were recorded and will be summarized by Kate Ruskin (Wildlife Trust-Columbia University).



Jamaica Bay

Canarsie Pol

30 May 2007, 7:30-10:30AM (ground)
With Alexander Summers, Cal Vornberger, Darcy Hanson, and Chris Olijnyk.

2 June 2007, 11:40AM-12:00PM (helicopter)
With Cal Vornberger

Canarsie Pol was surveyed by ground on 30 May, which consisted of adult counts along the perimeter of active wading bird nesting areas (in the north and southeastern areas of the island), and adult counts of gulls in open areas in the central and southern parts of the island. In an effort to obtain a more accurate wading bird estimate, the NPS arranged for the author and one volunteer to briefly survey the island via NYPD helicopter. Although limited time was available and we used one observer with binoculars and one photographer, we followed flight survey techniques as described in Buckley and Buckley (1980). One observer counted adults observed on nests and adults flying into the colony. High-resolution digital photographs were taken of the island as we flew over, and used later to compare with observed estimates (Figure 6).

FIGURE 6: Aerial photograph of Canarsie Pol, 2 June 2007. Images taken from a helicopter were used to identify core nesting areas and estimate nesting activity of wading birds on this thickly vegetated island. Light-colored wading birds were easily observed, while darker wading birds were less obvious and not reliably estimated using this method.
Photo: © Cal Vornberger.

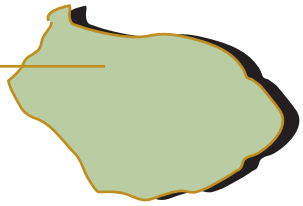
As a result of both ground and aerial surveys, the island was estimated to support 533 wading bird nests of nine species, including Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Yellow-crowned Night-Heron, Little Blue Heron, Green Heron, Tricolored Heron, and Cattle Egret. This island supports the highest diversity of wading birds in NY/NJ Harbor, and was only one of two locations where Cattle Egrets continue to nest.

Canarsie Pol also supports the largest gull colony in Jamaica Bay, with an estimated 1,120 Herring and 155 Great Black-backed gulls nesting on the island based on adult counts. No cormorants were observed nesting on the island, also large masses were present on an old pier located on the northern end of Canarsie Pol. A large stick nest build on an Asiatic Bittersweet-covered tree, and in proximity to numerous wading bird nests, was observed southeastern section of the island; while unoccupied, the structure looked consistent with an Osprey nest. Other birds observed on the island during ground counts included four Gadwall nests, six Fish Crow nests, 40 Boat-tailed Grackle adults, 10 Willet adults and three nests, one Red-tailed Hawk adult, and 33 American Oystercatcher adults with four juveniles.

Vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed. Wading

birds nesting in the southeastern part of the island use areas thickly colonized by Asiatic Bittersweet, and have been increasingly difficult to survey over the past ten years.

Ruffle Bar



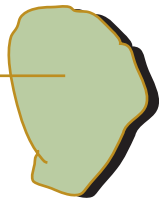
23 May 2007, 12:15-1:05PM

With Don Riepe, Elizabeth Craig, Camille Joseph, Jessica Schnell, Michael Feller, and Alexander Summers

A search of Ruffle Bar revealed no nesting wading birds or cormorants, and the limited presence of gulls. Based on adults present, an estimated 4 Herring and 18 Great Black-backed gulls may have attempted to nest on the island. However, the few nests that were observed while on transit on the island showed evidence of egg predation. Raccoon tracks were observed throughout the island during the survey, and Ruffle Bar is known to support a raccoon population throughout the year. Their presence makes it unlikely that colonial waterbirds will successfully nest on Ruffle Bar unless raccoon populations are managed.

Other species observed on the island include 160 Atlantic Brant, 12 adult American Oystercatchers and one nest, four Fish Crow nests, six Canada Goose nests, and several common resident passerines exhibited evidence of nesting activity (i.e., Eastern Towhee, Yellow Warbler, Red-winged Blackbird, White-eyed Vireo, Northern Mockingbird, Tree Swallow, and Song Sparrow). Variegated Fritillary (Euptoieta claudia), a southern butterfly species, was also observed on the island. Vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed.

White Island



2 June 2007 12:00-12:10PM (aerial)

With Cal Vornberger

A brief aerial observation was conducted of White Island, and no nesting wading birds or cormorants were observed. Previous surveys have not described any wading bird, cormorant, or gull nesting activity. However, approximately 30 Herring and 10 Great Black-backed gulls were present on the ground in the center of the island, suggesting the presence of nests. No vegetation surveys were conducted, and ground-based surveys should be conducted to verify gull nesting activity in 2008. As mitigation for the construction of the Gateway Estates shopping center and removal of 56 acres of grassland habitat east of Hendrix Creek, a grassland restoration project was proposed for White Island, and would be carried out by NYCDPR.

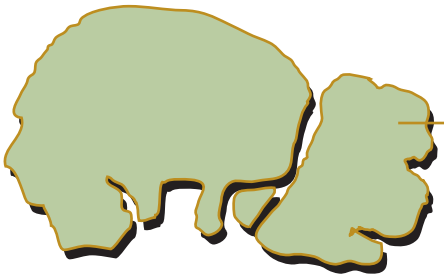
Subway Island

23 May 2007, 1:45-3:10PM

With Don Riepe, Elizabeth Craig, Camille Joseph, Jessica Schnell, Michael Feller, and Alexander Summers

This island is traversed from north to south by Metropolitan Transit Authority (MTA) subway tracks, and mainly supports nesting gulls. The island is primarily open, with patches of shrub-scrub and a limited number of trees, primarily on the eastern side of the subway tracks. Based on the number of adults present, an estimated 568 Herring and 118 Great Black-backed gulls nested on the island. Two pairs of Black-crowned Night-Herons were in the process of nest building on Subway Island, and used shrubs and trees that were entangled with vines (Table 6). One nest was constructed approximately 10 meters west of the MTA tracks in a Bayberry shrub and Black Cherry tree entwined by Asiatic Bittersweet and Virginia Creeper. The other nested in Tree-of-Heaven and Black Cherry with Asiatic Bittersweet. Other vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed.

Other bird species included five crow nests (two of which were Fish Crows), 26 American Oystercatcher adults and six confirmed nests, 12 Willet adults and two confirmed nests, six Canada Goose nests, one American Black Duck nest, one Mallard nest, 80 Atlantic Brant, 12 Forster's Tern adults, one Clapper Rail adult, and numerous foraging wading birds (i.e., Snowy Egret, Glossy Ibis, Little Blue Heron, and Great Egret).



Little Egg Marsh

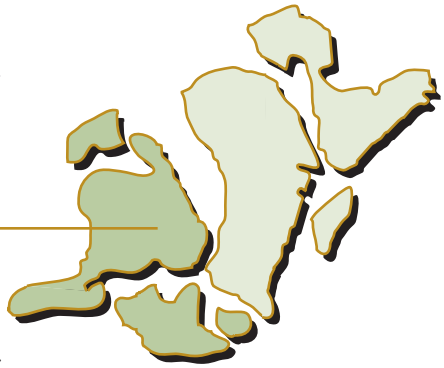
3 June 2007, 6:20-6:50AM

With Abraham Borker

The author and a researcher conducting breeding bird surveys for NPS/NJ Audubon conducted surveys of the sandy upland area of Little Egg Marsh. One Great Egret nest was observed in a Black Cherry in 2002, although no wading birds or cormorants were noted on the island in 2007. Tree and shrub species present that may support wading bird nesting included Black Cherry, Winged Sumac, and Eastern Red Cedar. Other vegetation noted on the island during opportunistic surveys is noted in Tables 12-14. No trends or overall habitat designations were determined from species observed.

The island is primarily used by nesting gulls, and based on the number of adults present, an estimated 140 Herring and 65 Great Black-backed gulls nested on the island. Common Tern adults were noted on the island in 2004, though no nests were discovered; during this survey, eight Common Tern nests

were observed in the central and western parts of the colony. Other species observed included 15 American Oystercatcher adults and one confirmed nest, six Willet adults, six Canada Goose nests, and one American Crow nest.



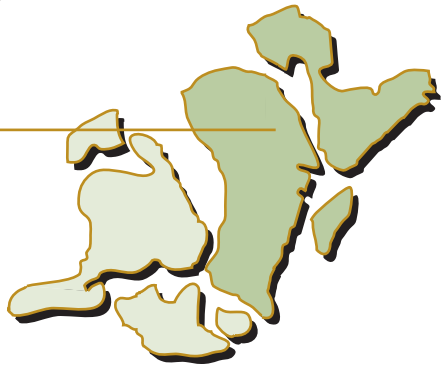
Elders Point Marsh - West

30 July 2007

By Don Riepe, Kate Ruskin, and Elizabeth Craig

In early July 2007, Don Riepe observed a number of Double-crested Cormorants perched in several trees, and observed constructed nests. A subsequent ground count was conducted, and 31 cormorant nests were verified in a cluster of 15 Tree-of-Heaven. Although most of the nests were empty, presumably having fledged young, nestlings that were present were approximately four to five weeks old. One Great Egret was present in the trees on Elders West, and a non-cormorant nest was observed in the area, so this was recorded as a potential nesting bird. Ground cover consisted of Tree-of-Heaven, Common Reed, Virginia Creeper, Poison Ivy, Privet, Common Reed, and various grasses. Approximately 20 American Oystercatcher adults were also observed on the island.

This is the first record of cormorants nesting within Jamaica Bay since the Harbor Herons Project began reporting on the area in 1998. The expansion of Double-crested Cormorants as nesters into Jamaica Bay should be closely monitored. Any island or structure where they are observed should be surveyed for nesting activity each year. The relatively recent expansion of cormorant populations on Hoffman Island, and now Jamaica Bay, contrasts with the slow decline noted on Huckleberry Island, Shooter's Island, and South Brother Island. In order to describe cormorant population trends in NY/NJ Harbor, an analysis of existing data is being conducted by Susan Elbin of Wildlife Trust and the author.



Elders Point Marsh – East

28 May 2007

By George Frame and NPS seasonal researchers

Elders East has a small dredge-spoil island with scrub-shrub uplands, with stands of Common Reed and various tree species. A salt marsh restoration project was conducted there by NPS/US Army Corps of Engineers in 2006, although left the upland areas of the island relatively intact. NPS has conducted regular habitat and wildlife surveys on the island both before and after the restoration project, and the following information was relayed by the project manager, Dr. George Frame. Based on the number of adults present, approximately 170 Herring and 4 Great Black-backed gulls nested on the island. Other observations included 8 American Oystercatcher adults and three nests, one Willet nest, two Least Sandpiper adults, one Boat-tailed Grackle, and nine Canada Geese.

MAINLAND ACCOUNTS

The NYCA Harbor Herons Project has traditionally reported nesting activity on island colonies only. As two species of wading birds are known to nest in mainland areas, bothYellow-crowned Night-Heron and Green Heron, any nesting information for these species will be reported in this section in Harbor Herons Project reports.

The most notable example, a nesting colony of Yellow-crowned Night-Herons located at the Redfern Houses in Far Rockaway, was visited on 30 May 2007 (12:50-1:25PM) by the author, Alexander Summers, Cal Vornberger, and Darcy Hanson. A total of 26 active nests were observed, with an additional 6 unoccupied nests also in the area (Table 2). The majority of nests were built in willow oaks and locusts, with one nest in a red oak. This is the fourth year the colony has been confirmed, and is the largest aggregation of Yellow-crowned Night-Herons in New York City. NYCA has initiated a dialogue on the persistence of this colony with the residents and management of the Redfern Houses, the NYC Housing Authority, and the NYC Department of Parks and Recreation.

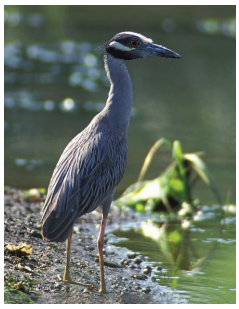
Several smaller incidences of YCNH nesting have been reported in Staten Island and several sites in Nassau County in recent years, although no information was available for inclusion in this report.

Hugh Corolla (Hackensack Riverkeeper) has presented information Yellow-crowned Night-Heron nesting in the Meadowlands and northern New Jersey at HEP Harbor Herons Subcommittee meetings. In 2007, the author and Gareth Russell (NJIT/Rutgers University) observed breeding Yellow-crowned Night-Herons in Secaucus, at Schmidt's Woods Park (1 pair) and Harmon Cove (8 pairs). Yellow-crowned Night-Herons have also nested in central Bergen County (vicinity of Waldwick and Allendale) and Laurel Hill County Park in Secaucus; no 2007 information, however was available for inclusion in this report. Any person with detailed information on wader nesting in northern NJ is encouraged to report to NJDEP's Division of Fish and Wildlife-Endangered and Nongame Species Program (Tel. 609-292-9400).

SPECIES ACCOUNTS

The following species accounts summarize overall nest estimated, and offer a comparison with recent years. These nest numbers represent a one-day survey in late May, and may not reflect overall species trends. Interpreting these species accounts should be tentative, and considered along with other regional efforts.

Black-crowned Night-Heron: The 802 nests noted for Black-crowned Night-Herons in 2007 represents a continued decline of this species within the NY/NJ Harbor. They were present on nine of 10 colonies that supported wading bird nesting in the harbor. This species represents slightly less than half of the total wading bird population in the area; in past years, Black-crowned Night-Herons represented more than 60% of the population. Records of this species nesting in mainland colonies throughout the NY/NJ Harbor, in red-maple swamps and similar forested wetland habitats, are present in the literature as far back as the 1850's. An interesting review of their behavior may be found in William T. Davis' 'Days Afield On Staten Island.'



Yellow-crowned Night-Heron: The total of 15 nests on two islands and 26 mainland nests at one location were observed for these species in NY/NJ Harbor. The number of islands where this species is detected fluctuates among years; this fact, and that Yellow-crowned Night-Herons nests on the mainland exceeds their populations on islands, a meaningful comparison with past data is difficult.

Great Egret: Approximately 361 pairs of Great Egrets were present on seven islands in NY/NJ Harbor. This represents a 36% increase over 2004, and part of a five-year increasing trend for this species. Hoffman Island and South Brother Island supported over 100 nests each, and one nest potentially existed within a newly discovered cormorant colony in Jamaica Bay (Elders Point West). The increase of this Great Egrets in NY/NJ Harbor is consistent with regional increases for this species in the northeastern U.S. (K. Parsons, Manomet Center for Conservation Sciences, pers.comm.).

Snowy Egret: Approximately 308 pairs of Great Egrets were present on four islands in NY/NJ Harbor. This represents a 22% increase over 2004, and part of a five-year increasing trend for this species. Hoffman Island and South Brother Island supported over 100 nests each.

Little Blue Heron: Fourteen Little Blue Heron nests were located on two islands in 2007, a slight increase over the 11 nests identified in the 2004 survey. As in 2004, this species was noted on Canarsie Pol and Hoffman Island. Pairs have been intermittently observed on other islands, Goose Island, although no nesting was confirmed there in 2007. This species approaches the northern extent of its range in the NY/NJ Harbor area, and these increases may be evidence of a gradual range expansion into the northeastern U.S.

Tricolored Heron: Two Tricolored Heron nests were noted on Canarsie Pol in 2007. This is traditionally a southern species, and no increasing trends in NY/NJ Harbor have been observed. The first record of Tricolored Herons nesting in NY/NJ Harbor occurred in 1955 on Ruler's Bar Hassock in Jamaica Bay, and nesting for this species has also been observed in colonies in Long Island's Great South Bay.

Cattle Egret: Two Cattle Egret nests were found on two colonies in 2007, one each on Canarsie Pol and South Brother Island. Interestingly, this low level of nesting has held on these islands for the past several years, while dropping off on Hoffman Island. Overall, the population has declined from a high of 266 pairs on two islands (Prall's and Shooter's islands) in 1985.

Green Heron: This species was noted on Canarsie Pol (two nests) and Hoffman Island (one nest) in 2007. As for Yellow-crowned Night-Herons, this species nests as often or more in mainland areas, and is not well represented by the Harbor Herons Project. This species, along with the Black-crowned Night-Heron, has been reported in the NY/NJ Harbor as a breeding species since the 1850s. It is very likely that, as in other parts of its range, this species declining due to habitat development. An effort to assess their population in NY/NJ Harbor would be a worthwhile endeavor.

Glossy Ibis: From an increase of 350 nests in 2004, the largest number reported on the Harbor Herons Survey, nesting decreases were noted for Glossy Ibis. Approximately 254 nests were present on three islands; this represents a 27% decline and a five-year low for Glossy Ibis. It also tracks a regional decline for this species. The majority of Glossy Ibis nested on Canarsie Pol and Hoffman Island, and two nests were noted on South Brother Island.

Double-crested Cormorant: A total of 1,046 Double-crested Cormorant nests were observed on seven islands (Huckleberry, U Thant, Hoffman, South Brother, Shooter's, and Swinburne islands and Elders Point West; Tables 2&4). While their populations have shown an apparent increase since 2004, they have decreased slightly (-11%) since 2006. No evidence of nesting was found on channel markers surveyed in the harbor. Harbor-wide population trends for Double-crested Cormorants are not easily described from a comparison of nest numbers. For instance, nesting "increases" at one colony (Swinburne Island) were likely due in part to a change in survey method (on shore vs. by boat),

and a late season count where nests were obscured by vegetation. On Hoffman Island, increases have been well-described since nesting was first observed on the island, although the pace of nesting on the island may be slowing due to the lack of cormorant colony growth in 2007. An analysis of Double-crested Cormorant population trends in NY/NJ Harbor is pending (Elbin and Bernick in prep).

Herring Gull: A total of 2,656 nests of Herring Gulls were estimated from adult counts. They were present on 14 of 17 islands surveyed throughout the city, with the exception of Prall's Island, Isle of Meadows, and Goose Island. The largest colony was present on Canarsie Pol. Numbers have declined dramatically on most islands covered through 2004 by the Harbor Herons Project due primarily to habitat succession and likely to the closure of all open landfills in the NY/NJ Harbor. A meaningful comparison with past Harbor Herons Project surveys is not possible, as the core nesting areas presently in Jamaica Bay were previously surveyed by other organizations. An examination of the NYDEC-LICW dataset would give an appropriate region perspective on trends for this species.

Great Black-backed Gull: A total of 796 nests of Great Black-backed Gulls were estimated from adult counts. They were present on 14 of 17 islands surveyed throughout the city, with the exception of the Arthur Kill and Kill Van Kull islands. The largest colony was present on Canarsie Pol. As with Herring Gulls, a meaningful comparison for this species with past Harbor Herons Project surveys is not possible, as the core nesting areas presently in Jamaica Bay were previously surveyed by other organizations. An examination of the NYDEC-LICW dataset would give an appropriate region perspective on trends for this species.

CONCLUSIONS AND RECOMMENDATIONS

Continued monitoring of wading bird populations through nesting surveys is a necessary step to comprehend species status, population trends, and overall health and persistence of the system. The revised survey protocol used in 2007 was largely successful. We completed surveys of most target islands within the last two weeks of May, as noted by the NYSDEC-LICW survey protocol. The islands that were surveyed later than this have not previously supported wading birds, and were completed within three days of the recommended period.

At least three areas of the Harbor Herons Project survey protocol need further improvement. First, a repeatable method to survey islands with dense vegetation is required, as aerial surveys via NYPD helicopter will not likely be available each year. This somewhat intractable problem is faced by many organizations that survey islands heavily colonized by invasive species, and further efforts to design a reasonable survey tech-

nique will be explored. Secondly, a method to quantify productivity is necessary. The most effective technique would likely be monitoring a subset of nests within selected colonies over the breeding season; both the method and funding necessary to carry out productivity studies will be explored for the 2008 nesting survey. Lastly, an improved habitat assessment protocol should be developed, including a rapid assessment technique and additional botanists during breeding season vegetation surveys, and a non-breeding season vegetation survey.

The largest success of 2007 was the purchase of South Brother Island. Several organizations were involved, including Trust for Public Land, Wildlife Conservation Society, The Point Community Development Corporation, and Congressman Serrano (16th Congressional District, Bronx. NY). The island was purchased with funding from the National Oceanic and Atmospheric Administration's Coastal and Estuarine Land Conservation Program, and was officially transferred to NYCDPR on 20 November 2007. There is no doubt that natural resources, specifically colonial waterbirds, are the island's best asset. In 2007, this island supported approximately one-third of all nesting wading birds in NY/NJ Harbor, and is one of few islands in the city that has supported a wading bird and cormorant colony for over 30 years. NYCA will continue to advocate for the island's protection as an important nesting site, and will collaborate with local community organizations to conduct off-island studies of South Brother's wading birds.

The discovery of Asian Longhorned Beetles on Prall's Island is one of the most troubling

Relating to colonial waterbird nesting within NY/NJ Harbor, several major conservation challenges were observed in 2007. The discovery of Asian Longhorned Beetles on Prall's Island and subsequent tree removal is one of the most troubling. Management of ALBs detected on island colonies would have severely detrimental effects on habitat available to nesting birds, and a statewide impact on colonial waterbird populations.

Another conservation issue is the presence of mammalian predators on current and former nesting islands, particularly raccoons. Mammalian predators can have severe impacts on nesting colonial waterbird populations, and evidence of wading bird and/or gull predation has been observed on Ruffle Bar, Goose Island, and others. Efforts to quantify mammalian presence throughout the year should be conducted on all nesting islands, and methods to control the impacts on colonial waterbirds should be considered for island colonies found to support mammalian predators.

Human disturbance on island colonies is difficult to avoid in a highly urban setting. However, few popular media articles, when discussing islands in NY/NJ Harbor, effectively mention the ownership and protected status of nesting islands, and the detrimental effects of human disturbance on nesting birds. In recent years, several pieces have appeared that describe unauthorized visits to protected islands, in the popular media (e.g., 'Castaway' in New York Magazine, 2 July 2007; 'Brooklyn

Archipelago' on NPR's This American Life, 3 February 2006), relating to art projects (i.e., Duke Riley's 'Circumnavigate'), and on geocaching websites that encourage visitation of Prall's Island and South Brother Island. These are somewhat troubling articles, as they may encourage a reader to visit these places without understanding their potential impact on bird populations.

The first step to addressing unauthorized visitation of islands is through clear signage. In 2007, NYSDEC provided 100 signs for posting on city-owned and federally-owned islands in NY/NJ Harbor, that clearly state the restricted status of the islands and the protected status of colonial waterbirds (Figure 7). In addition to signage, improvements in law enforcement, particularly patrols of islands and summaries of trespassing incidents, would be helpful in protecting these islands.

FIGURE 7: One aspect of protecting colonial waterbird nesting habitat in NY/NJ Harbor is the placement of clear signage on known nesting islands. As the public becomes more interested and active in the harbor, it is important to notify potential unauthorized visitors of the importance of these islands -- through signs, education, and other public programs. Photo: © A. Bernick.

APHIS, NYSDEC, and other organizations) removed gray birches and red maples formerly used by nesting wading birds. Photo: © A. Bernick.

In situations where press coverage regarding NY/NJ Harbor islands is imminent, the subject(s) of the article – an individual researcher, non-profit conservation organization, or governmental agency -- should stress that these issues be thoughtfully considered and incorporated in the press coverage. This would reinforce to the public that these islands are unique, lively places that often support large bird populations, and that these birds are sensitive to human disturbance.

Not only does the conservation community need to effectively, publicly express the conservation issues that unauthorized visitation to nesting islands can have on bird populations; we also need to offer programs for the public to learn about, appreciate, and participate in the study of these interesting islands and their birds. NYCA currently runs eco-tours that offer views and narratives on islands and nesting wildlife, and anticipated collaborations with Rocking the Boat and other community organizations will offer many a chance to participate in observational wading bird studies and other conservation projects.

Additional recommendations and goals for 2008:

- A report on Double-crested Cormorant population trends in the NY/NJ Harbor area (1986-2007) written by the author and Dr. Susan Elbin of Wildlife Trust is pending.

- Complete and distribute the NY/NJ HEP Harbor Herons Subcommittee's Harbor Herons Conservation Plan for external review in 2008.

- Open/continue dialogue with all agencies responsible for colonial waterbird surveys in New York, New Jersey, and Connecticut, in order to establish a working regional perspective on colonial wading bird and cormorant populations.

- For privately-owned Huckleberry Island, continued communication and collaboration with the current owners should be pursued by parties interested in the persistence of wading bird and cormorant populations.

- Encourage the development of wading bird and cormorant research projects at NY/NJ universities, at high school, undergraduate, and graduate levels.

- Establish a list of research conducted each season on the Harbor Herons or their nesting colonies (see Appendix A).

- Analyze data from the NYCA Harbor Heron Surveys (1986-2007) and publish a summary report.

- Examine relationships between or among metropolitan NY/NJ area colonies with southern New Jersey, Long Island, and Connecticut, including gene flow, post-fledging dispersal, and natal philopatry.

- Design a photographic guide of nests, eggs, and young to aid volunteers in identification during nesting surveys. A reference guide to identify nest trees, shrubs, and vines should also be developed, particularly in association with Cal Vornberger, Michael Feller and David Künstler. Guides should be available in PDF format for all volunteers.

New York City Audubon's Harbor Herons Project has recently included several additional programs (i.e. Harbor Herons Monitoring Program and Eco-tours) that allow for greater public participation and awareness of the 'Harbor Herons', and have strengthened NYCA's role as an advocate for conserving NY/NJ Harbor's wading bird populations. New and vital collaborations between NYCA and other organizations (i.e. Wildlife Trust) have formed, and the open forum of NY/NJ Harbor Estuary Program's Harbor Herons Subcommittee has brought organizations and agencies from New York, New Jersey, and Connecticut to discuss issues of regional importance.

The largest success of 2007 was the purchase of South Brother Island.

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TABLES AND APPENDIX

2007 Nesting Survey

*TABLE 1. Survey schedule for wading bird and cormorant counts, May-July 2007**

Location Surveyed	Date(s)	Number of Observers	Ownership
LONG ISLAND SOUND			
Goose Island	24 May	4	NYCDPR
Huckleberry Island	25 May	8	Huckleberry Indians, Inc.
EAST RIVER			
North Brother	17 May	6	NYCDPR
South Brother	22 May	9	NYCDPR (20 Nov 2007
Mill Rock	17 May	4	NYCDPR
U Thant Island	17 May	2	NYCDPR
ARTHUR KILL-KILL VAN KULL			
Shooter's Island	18 May	7	NYCDPR
Prall's Island	18 May	7	NYCDPR
Isle of Meadows	18 May	7	NYCDPR
LOWER NEW YORK HARBOR			
Hoffman Island	21 May	7	NPS
Swinburne Island	21May	7	NPS
JAMAICA BAY			
Canarsie Pol	30 May, 2 June §	4, 2	NPS
White Island	2 June §	2	NYCDPR
Ruffle Bar	23 May	7	NPS
Elders Point	30 July	3	NPS
Little Egg Marsh	3 June	2	NPS
Subway Island	23 May	7	NPS
MAINLAND – FAR ROCKAWAY			
Redfern Houses	30 May	4	NYC Housing Authority

* All cormorant data collected jointly with Dr. Susan Elbin (Wildlife Trust) and on Huckleberry and Goose islands with David Künstler (NYCDPR, Van Cortlandt & Pelham Bay Parks Administrators' Office). Elders Point data collected by Don Riepe, Kate Ruskin, and Elizabeth Craig.

§ Data on 2 June 2007 collected by NYPD helicopter

TABLE 2. Wading bird, cormorant, and gull nesting activity in NY/NJ Harbor and surrounding waterways, 2007. Mainland nesting noted for Yellow-crowned Night Heron includes known location in NYC as discussed in text.

	South Brother	Hoffman	Carnasie Pol	Goose	Mill Rock	North Brother	Huckle-Berry	Subway	Swin-burne	Elders West	Elders East	U Thant	Ruffle Bar	Little Egg	White	Prall's	Shooter's	Isle of Meadows	Total Nests	Mainland Nesting
WADING BIRDS																				
Black-crowned Night Heron	316	184	209	33	39	13	5	2	1	0	0	0	0	0	0	0	0	0	802	
Great Egret	117	148	66	27	1	0	1	0	0	1	0	0	0	0	0	0	0	0	361	
Snowy Egret	134	105	49	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	308	
Glossy Ibis	2	84	168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	
Yellow-crowned Night Heron	0	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	26
Little Blue Heron	0	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
Green Heron	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4
Tricolored Heron	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Cattle Egret	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Unknown	22	36	16	6	3	2	0	0	0	0	0	0	0	0	0	0	0	0	85	
Total Wading Birds	**592**	**567**	**533**	**86**	**43**	**15**	**6**	**2**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1846**	
CORMORANTS																				
Double-crested cormorant	271	155	0	0	0	0	260	0	264	31	0	24	0	0	0	0	41	0	1046	
GULLS AND TERNS																				
Herring Gull	123	46	1120	0	90	72	14	568	198		170	75	4	140	30	0	6	0	2656	
Great Black-backed Gull	93	142	155	1	20	9	31	118	112	0	4	18	18	65	10	0	0	0	796	
Common Tern	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	
TOTAL NESTS	**1079**	**910**	**1808**	**87**	**153**	**96**	**311**	**688**	**575**	**32**	**174**	**117**	**22**	**213**	**40**	**0**	**47**	**0**	**6352**	**30**

TABLE 3. Summary of wading bird nests on islands of the New York/New Jersey Harbor, May-June 2002-2004 and 2007.

	2002	2003	2004	2007
Black-crowned Night-Heron	944	1,093	841	802
Yellow-crowned Night-Heron	6	8	7	15
Great Egret	214	183	230	361
Snowy Egret	204	217	240	308
Cattle Egret	3	1	6	2
Little Blue Heron	4	4	11	14
Tricolored Heron	6	1	2	2
Green Heron	0	0	0	3
Glossy Ibis	141	329	350	254
TOTAL*	**1,522**	**1,836**	**1,711**	**1,846**
Number of islands	7	7	7	10

*Totals include unidentified wader nests.

TABLE 4. Summary of Double-crested Cormorant nesting in the New York/New Jersey Harbor, May to July 2003-2007 †

NUMBER OF CORMORANT NESTS	YEAR				
ISLAND	**2003**	**2004**	**2005**	**2006**	**2007**
Shooter's Island	48a	45a	36a	54	41
Huckleberry Island	247	324	323	344	260
South Brother Island	625b	350	381	326	271
U Thant	11b	16	15	21	24
Hoffman Island	~25	34	64	166	155
Swinburne Island	142c	108c	87c	264d	264d
Elder Point West	0	0	0	0	31
TOTAL	**1,098**	**877**	**906**	**1,175**	**1,046**

† Data sources include NYCA interim surveys (2005-2006), the Wildlife Trust NY Bioscape Initiative's DCCO study by Dr. Susan Elbin (2006-2007), and nesting surveys by Paul Kerlinger (2003-2004) and David Künstler (2003-2006),

a Includes nests on one to three channel markers in the Arthur Kill and Kill Van Kull between the Bayonne Bridge and Outerbridge Crossing. No nesting on these structures in 2006-2007.

b Estimated based on numbers present in previous years (see Kerlinger 2003, 2004).

c Counts at Swinburne Island conducted from a boat ~50-100 meters from shore

d Counts at Swinburne Island conducted on island

TABLE 5. Summary of Great Black-backed and Herring Gull nests on selected islands of the New York/New Jersey Harbor, 2002-2004 and 2007.

	HERRING GULL				GREAT BLACK-BACKED GULL			
	2002	**2003**	**2004**	**2007**	**2002**	**2003**	**2004**	**2007**
Shooter's Island	0	1	0	6	0	1+	0	0
Huckleberry Island	38	65	5	14	76	55	2	31
Goose Island	0	0	0	0	1	1	0	1
Mill Rock	20	15	15	90	36	10	8	20
South Brother Island	38	35	40	123	32	28	40	93
North Brother Island	126	100+	100+	72	52	50	50	9
U Thant Island	0	0	N/S	75	16	12	N/S	18
Hoffman Island	75	80	47	46	185	135	112	142
Swinburne Island	82	86	84	198	72	55	6	112
Canarsie Pol*	N/S	N/S	N/S	1,120	N/S	N/S	N/S	155
Ruffle Bar*	N/S	N/S	N/S	4	N/S	N/S	N/S	18
Little Egg*	N/S	N/S	N/S	140	N/S	N/S	N/S	65
Subway Island*	N/S	N/S	N/S	568	N/S	N/S	N/S	118
Elders East*	N/S	N/S	N/S	170	N/S	N/S	N/S	4
White Island*	N/S	N/S	N/S	30	N/S	N/S	N/S	10

N/S = Not surveyed for gulls by NYCA

* Islands in Jamaica Bay were surveyed for gulls by other researchers prior to 2007. See LICW for data and sampling methods.

TABLE 6. Nesting trees, shrubs, and vines for wading birds on five islands in NY/NJ Harbor. Individual nest data was not collected for Canarsie Pol due to use of aerial surveys. Complete data for Goose Island is available from Künstler (2007b).

MILL ROCK	**BCNH**	**GREG**
Red Mulberry	35	1
Norway Maple	4	0
NORTH BROTHER ISLAND		
Black Cherry	4	0
Mulberry spp	2	0
Asiatic Bittersweet	5	0
Crabapple	1	0
Asiatic Bittersweet/chain-link fence	1	0
HUCKLEBERRY ISLAND		
Norway Maple	3	0
Black Cherry	2	0
Multiflora Rose	0	1
SUBWAY ISLAND		
Tree-of-heaven/Black Cherry/Bittersweet	1	0
Black Cherry/Bayberry/Bittersweet/Virginia Creeper	1	0
SWINBURNE ISLAND		
Mulberry	1	0

TABLE 7. Nesting trees, shrubs, and vines for Black-crowned Night-Herons, Snowy Egrets, and Great Egrets at South Brother Island, 22 May 2007. Glossy Ibis and Cattle Egrets, although observed on the island and likely breeding, were not observed on or near a nest. Double-crested Cormorants nested predominantly in Black Locust in the center of the colony and Black Cherry/bittersweet in other areas (S. Elbin, Wildlife Trust, pers.comm.).

SOUTH BROTHER ISLAND NESTING VEGETATION			
	BCNH	**SNEG**	**GREG**
Black Cherry	73	3	14
Mulberry sp.	69	0	0
Box Elder	36	1	2
Asiatic Bittersweet	9	17	9
Multiflora Rose	5	87	1
Sycamore Maple	5	0	0
Hickory sp.	4	0	0
Elderberry	2	5	0
Crabapple	1	0	0
Black Locust	1	0	0
	205	113	26
Black Cherry/bittersweet	42	16	46
Box Elder/bittersweet	38	0	5
Mulberry/bittersweet	18	1	35
Tree-of-heaven/bittersweet	9	0	0
Hackberry/bittersweet	2	0	0
Elderberry/bittersweet	2	2	0
Multiflora Rose/bittersweet	0	2	5
	111	21	091
Total nests	**316**	**134**	**117**

TABLE 8. Nesting trees, shrubs, and vines for wading birds at Hoffman Island, 21 May 2007. A Green Heron observed on the island was not on or near a nest. Double-crested Cormorants nested predominantly in Black Locust in the southern portion of the colony (S. Elbin, Wildlife Trust, pers.comm.).

NESTING VEGETATION	BCNH	SNEG	GREG	GLIB	LBHE	YCNH
Black Cherry	31	3	34	6		1
Mulberry sp	56	41	55	26	3	
Box Elder		2	2	4		
Asiatic Bittersweet				10		
Multiflora Rose	35	54	10	11	3	
Privet sp.	14			3		
	136	**100**	**101**	**60**	**6**	**1**
Black Cherry/Bittersweet		2	9	9		
Box Elder/Bittersweet	3					
Mulberry/Bittersweet	20		32	12		
Tree-of-heaven/Bittersweet	11			3		
Hackberry/Bittersweet	1		1			
Multiflora Rose/Bittersweet	2					
Mulberry/Multiflora Rose	8		3		2	
Black Cherry//Multiflora Rose	1					
Privet/Bittersweet	2	3	2			
	48	**5**	**47**	**24**	**2**	**0**
Total	**184**	**105**	**148**	**84**	**8**	**1**

TABLE 9. Flora observed on islands in the East River, Hutchinson River, and Long Island Sound, May 2007.

Growth Type	COMMON NAME	SCIENTIFIC NAME	COLONY					
			South Brother	North Brother	Mill Rock	U Thant	Huckle-berry	Goose
Fern	Bracken Fern	*Pteridium aquilinum*						
Forb	Wild Garlic	*Allium vineale*	X	X				
Forb	Dusty Miller	*Ambrosia stelleriana*						
Forb	Indian Hemp	*Apocynum cannabinum*						
Forb	Lesser Burdock	*Arctium minus*		X				
Forb	Sandwort	*Areneria spp.*						
Forb	Milkweed	*Asclepias spp.*		X				
Forb	Charlock	*Brassica kaber*			X			
Forb	Common Chickweed	*Cerastium vulgatum*						
Forb	Greater Celandine	*Chelidonium majus*		X	X			
Forb	Asiatic Dayflower	*Commelina communis*		X				
Forb	Jimsonweed	*Datura stramonium*	X	X			X	
Forb	Daisy Fleabane	*Erigeron annuus*	X	X				
Forb	Stork's Bill	*Erodium cicutarium*						
Forb	Dogtooth Violet	*Erythronium americanum*						X
Forb	Hyssopleaf Thoroughwort	*Eupatorium hyssopifolium*						
Forb	Thoroughwort	*Eupatorium spp.*						
Forb	Cypress Spurge	*Euphorbia cyparissias*						
Forb	Goldentop	*Euthamia sp.*						
Forb	Rough Bedstraw	*Gallium asperellum*						
Forb	Geranium	*Geranium sp.*						
Forb	Camphorweed	*Heterotheca subaxillaris*						
Forb	Motherwort	*Leonurus cardiaca*			X			
Forb	Evening Primrose	*Oenothera biennis*		X				
Forb	Primrose	*Oenothera sp.*						
Forb	Star of Bethlehem	*Ornithogalum umbellatum*			X	X		X
Forb	Ground Cherry	*Physalis sp.*						
Forb	Pokeweed	*Phytolacca americana*	X	X	X		X	
Forb	English Plantain	*Plantago lanceolata*	X	X				
Forb	Seaside Knotweed	*Polygonum glaucum*						
Forb	Littleleaf Buttercup	*Ranunculus abortivus*						
Forb	Curly Dock	*Rumex crispus*	X	X				X
Forb	Bitter Dock	*Rumex obtusifolius*		X				
Forb	Sage	*Saponaria sp.*						
Forb	Bur Cucumber	*Sicyos angulatus*	X					

TABLE 10. Flora observed on islands in the East River, Hutchinson River, and Long Island Sound, May 2007.

Growth Type	COMMON NAME	SCIENTIFIC NAME	COLONY					
			South Brother	North Brother	Mill Rock	U Thant	Huckle-berry	Goose
Forb	Seaside Goldenrod	*Solidago sempirvirens*	X				X	
Forb	Goldenrod spp	*Solidago sp.*		X	X			
Forb	Saltmarsh Sandspurry	*Spergularia marina*						
Forb	Panicled Aster	*Symphyotrichum lanceolatum*	X					
Forb	New York Aster	*Symphyotrichum novi-belgii*		X				
Forb	Aster	*Symphyotrichum sp.*					X	
Forb	Rabbitfoot Clover	*Trifolium arvense*						
Forb	Cow Vetch	*Vicia cracca*			X			
Forb	Violet	*Viola sp.*						
Forb	Virginia Strawberry	*Fragaria virginiana*						
Forb/ Vine	Switchgrass	*Panicum virgatum*						
Grass	Common Reed	*Phragmites australis*	X	X				
Grass	Smooth Cordgrass	*Spartina alterniflora*						X
Grass	Saltmeadow Cordgrass	*Spartina patens*						
Grass	Serviceberry	*Amelanchier canadensis*					X	
Shrub	Red Chokeberry	*Aronia arbutifolia*						
Shrub	Groundsel Bush	*Baccharis halmifolia*		X			X	
Shrub	Privet	*Ligustrum sp.*						
Shrub	European Privet	*Ligustrum vulgare*						
Shrub	Amur Honeysuckle	*Lonicera maackii*						X
Shrub	Northern Bayberry	*Morella pensylvanica*						
Shrub	Winged Sumac	*Rhus copallina*	X	X			X	
Shrub	Smooth Sumac	*Rhus glabra*		X				
Shrub	Pasture Rose	*Rosa carolina*	X					
Shrub	Mutliflora Rose	*Rosa multiflora*	X	X	X		X	
Shrub	Rugose Rose	*Rosa rugosa*						
Shrub	Viburnum	*Viburnum dentatum*						
Shrub	Allegheny Blackberry	*Rubus alleghaniensis*						
Shrub/ Vine	Blackberry spp.	*Rubus sp.*	X	X	X		X	
Shrub/ Vine	Common Elderberry	*Sambucus canadensis*	X				X	
Shrub/ Vine	Asiatic Bittersweet	*Celastrus orbiculatus*	X	X	X		X	
Vine	Japanese Honeysuckle	*Lonicera japonica*		X				
Vine	Roundleaf Greenbrier	*Smilax rotundifolia*	X					
Vine	Greenbrier	*Smilax spp.*		X				
Vine	Poison Ivy	*Toxicodendron radicans*	X	X				

TABLE 11. Flora observed on islands in the East River, Hutchinson River, and Long Island Sound, May 2007.

Growth Type	COMMON NAME	SCIENTIFIC NAME	COLONY					
			South Brother	North Brother	Mill Rock	U Thant	Huckle-berry	Goose
Tree	Unidentified - dead		X	X		X	X	
Tree	Box Elder	*Acer negundo*	X	X				
Tree	Norway maple	*Acer platanoides*	X	X	X		X	
Tree	Sycamore Maple	*Acer pseudoplatanus*	X					
Tree	Red Maple	*Acer rubrum*		X				
Tree	Tree-Of-Heaven	*Ailanthus altissima*	X	X	X		X	X
Tree	Gray Birch	*Betula populifolia*						
Tree	Hickory	*Carya sp.*	X				X	
Tree	Common Hackberry	*Celtis occidentalis*	X					
Tree	Eastern Red Cedar	*Juniperus virginiana*		X				
Tree	Sweet Gum	*Liquidambar styraciflua*						
Tree	Crabapple	*Malus sylvestris*	X	X				
Tree	White Mulberry	*Morus alba*	X	X	X			
Tree	Red Mulberry	*Morus rubra*	X	X			X	
Tree	Paulownia	*Paulownia tomentosa*		X			X	
Tree	Cottonwood	*Populus deltoides*		X				X
Tree	Big-leaved Aspen	*Populus grandidentata*						
Tree	Trembling Aspen	*Populus tremuloides*					X	
Tree	Black Cherry	*Prunus serotina*	X	X	X		X	X
Tree	Pin Oak	*Quercus palustris*						
Tree	Red Oak	*Quercus rubra*	X	X				X
Tree	Black Oak	*Quercus velutina*		X			X	
Tree	Glossy Buckthorn	*Rhamnus cathartica*						
Tree	Black Locust	*Robinia pseudo-acacia*	X	X				X
Tree	Willow spp.	*Salix spp.*					X	
Tree	Sassafras	*Sassafras albidum*		X			X	
Tree	American Basswood	*Tilia americana*		X			X	
Tree	American Elm	*Ulmus americana*						
Tree	Chinese Elm	*Ulmus parviforia*			X			
Vine	Porcelainberry	*Ampelopsis brevipedunculata*	X	X				
Vine	Rough Bedstraw	*Galium asprellum*						
Vine	English Ivy	*Hedera helix*						
Vine	Honeysuckle	*Lonicera sp.*		X	X			
Vine	Virginia Creeper	*Parthenocissus quinquefolia*	X	X			X	
Vine	Wild Buckwheat	*Polygonum convolvulus*						
Vine	Climbing False Buckwheat	*Polygonum scandens*						
Vine	Kudzu	*Pueraria montana*		X				
Vine	Climbing Nightshade	*Solanum dulcamara*		X				
Vine	Black Nightshade	*Solanum nigrum*	X	X				
Vine	Grape	*Vitis spp.*		X			X	
Vine	Wisteria	*Wisteria sp.*					X	

TABLE 12. Flora observed on islands in Jamaica Bay, Lower NY Harbor, and the Arthur Kill/Kill Van Kull, May 2007.

Growth Type	COMMON NAME	SCIENTIFIC NAME	COLONY								
			Carnasie Pol	Ruffle Bar	Subay	Little Egg	Hoffman	Swin-burne	Isle of Meadows	Prall's	Shoot-er's
Fern	Bracken Fern	*Pteridium aquilinum*									X
Forb	Wild Garlic	*Allium vineale*					X				
Forb	Dusty Miller	*Ambrosia stelleriana*			X						
Forb	Indian Hemp	*Apocynum cannabinum*									X
Forb	Lesser Burdock	*Arctium minus*	X				X				
Forb	Sandwort	*Areneria spp.*	X	X							
Forb	Milkweed	*Asclepias spp.*	X							X	
Forb	Charlock	*Brassica kaber*	X								
Forb	Common Chickweed	*Cerastium vulgatum*	X						X		
Forb	Greater Celandine	*Chelidonium majus*							X		
Forb	Asiatic Dayflower	*Commelina communis*	X				X				
Forb	Jimsonweed	*Datura stramonium*	X								
Forb	Daisy Fleabane	*Erigeron annuus*	X								
Forb	Stork's Bill	*Erodium cicutarium*			X						
Forb	Dogtooth Violet	*Erythronium americanum*									
Forb	Hyssopleaf Thoroughwort	*Eupatorium hyssopifolium*			X						
Forb	Thoroughwort	*Eupatorium spp.*	X						X		
Forb	Cypress Spurge	*Euphorbia cyparissias*	X		X						
Forb	Goldentop	*Euthamia sp.*								X	
Forb	Rough Bedstraw	*Gallium asperellum*	X						X		
Forb	Geranium	*Geranium sp.*							X	X	
Forb	Camphorweed	*Heterotheca subaxillaris*	X	X							
Forb	Motherwort	*Leonurus cardiaca*									
Forb	Evening Primrose	*Oenothera biennis*	X		X						
Forb	Primrose	*Oenothera sp.*		X							
Forb	Star of Bethlehem	*Ornithogalum umbellatum*									
Forb	Ground Cherry	*Physalis sp.*					X				
Forb	Pokeweed	*Phytolacca americana*	X		X		X				
Forb	English Plantain	*Plantago lanceolata*	X		X						
Forb	Seaside Knotweed	*Polygonum glaucum*	X				X				
Forb	Littleleaf Buttercup	*Ranunculus abortivus*							X		
Forb	Curly Dock	*Rumex crispus*	X				X	X			
Forb	Bitter Dock	*Rumex obtusifolius*	X				X				
Forb	Sage	*Saponaria sp.*			X						
Forb	Bur Cucumber	*Sicyos angulatus*	X				X				
Forb	Seaside Goldenrod	*Solidago sempirvirens*	X	X	X			X	X		X

TABLE 13. Flora observed on islands in Jamaica Bay, Lower NY Harbor, and the Arthur Kill/Kill Van Kull, May 2007.

Growth Type	COMMON NAME	SCIENTIFIC NAME	COLONY								
			Carnasie Pol	Ruffle Bar	Subay	Little Egg	Hoffman	Swin-burne	Isle of Meadows	Prall's	Shoot-er's
Forb	Goldenrod spp	*Solidago sp.*	X				X		X	X	
Forb	Saltmarsh Sand-spurry	*Spergularia marina*	X		X						
Forb	Panicled Aster	*Symphyotrichum lanceolatum*									
Forb	New York Aster	*Symphyotrichum novi-belgii*					X				
Forb	Aster	*Symphyotrichum sp.*	X						X		
Forb	Rabbitfoot Clover	*Trifolium arvense*	X	X					X		
Forb	Cow Vetch	*Vicia cracca*	X								
Forb	Violet	*Viola sp.*	X				X				
Forb/ Vine	Virginia Strawberry	*Fragaria virginiana*	X				X				
Grass	Switchgrass	*Panicum virgatum*							X	X	
Grass	Common Reed	*Phragmites australis*	X	X			X		X		
Grass	Smooth Cordgrass	*Spartina alterniflora*	X	X	X				X	X	
Grass	Saltmeadow Cordgrass	*Spartina patens*	X	X	X				X	X	
Shrub	Serviceberry	*Amelanchier canadensis*									
Shrub	Red Chokeberry	*Aronia arbutifolia*									X
Shrub	Groundsel Bush	*Baccharis halmifolia*								X	X
Shrub	Asiatic Bittersweet	*Celastrus orbiculatus*	X		X		X	X	X	X	X
Shrub	Privet	*Ligustrum sp.*	X				X				
Shrub	European Privet	*Ligustrum vulgare*					X				
Shrub	Amur Honeysuckle	*Lonicera maackii*	X								
Shrub	Northern Bay-berry	*Morella pensylvanica*		X	X				X	X	X
Shrub	Winged Sumac	*Rhus copallina*	X	X	X	X				X	
Shrub	Smooth Sumac	*Rhus glabra*		X					X	X	
Shrub	Pasture Rose	*Rosa carolina*	X								
Shrub	Mutliflora Rose	*Rosa multiflora*		X			X	X			
Shrub	Rugose Rose	*Rosa rugosa*		X	X						
Shrub	Common Elderberry	*Sambucus canadensis*					X				X
Shrub	Viburnum	*Viburnum dentatum*	X						X		X
Shrub/ Vine	Allegheny Black-berry	*Rubus alleghaniensis*	X							X	
Shrub/ Vine	Blackberry spp.	*Rubus sp.*	X	X							
Shrub/ Vine	Wisteria	*Wisteria sp.*									
Tree	Box Elder	*Acer negundo*	X				X			X	
Tree	Norway maple	*Acer platanoides*	X	X			X				X

TABLE 14. Flora observed on islands in Jamaica Bay, Lower NY Harbor, and the Arthur Kill/Kill Van Kull, May 2007.

Growth Type	COMMON NAME	SCIENTIFIC NAME	COLONY								
			Carnasie Pol	Ruffle Bar	Subay	Little Egg	Hoffman	Swin-burne	Isle of Meadows	Prall's	Shoot-er's
Tree	Sycamore Maple	*Acer pseudoplatanus*					X				
Tree	Red Maple	*Acer rubrum*							X	X	X
Tree	Tree-Of-Heaven	*Ailanthus altissima*	X	X	X		X		X	X	X
Tree	Gray Birch	*Betula populifolia*	X	X					X	X	X
Tree	Common Hack-berry	*Celtis occidentalis*	X					X			X
Tree	Eastern Red Cedar	*Juniperus virginiana*	X			X					
Tree	Sweet Gum	*Liquidambar styraciflua*								X	X
Tree	White Mulberry	*Morus alba*					X				
Tree	Red Mulberry	*Morus rubra*	X		X				X		
Tree	Paulownia	*Paulownia tomentosa*	X						X		X
Tree	Cottonwood	*Populus deltoides*	X	X							
Tree	Big-leaved Aspen	*Populus grandidentata*							X		X
Tree	Trembling Aspen	*Populus tremuloides*							X		
Tree	Black Cherry	*Prunus serotina*	X		X	X	X		X	X	
Tree	Glossy Buckthorn	*Rhamnus cathartica*								X	
Tree	Black Locust	*Robinia pseudo-acacia*	X				X	X			
Tree	Willow spp.	*Salix spp.*	X		X						
Tree	Sassafras	*Sassafras albidum*	X						X	X	X
Tree	Unidentified - dead		X								
Vine	Porcelainberry	*Ampelopsis brevipedunculata*	X				X				
Vine	Rough Bedstraw	*Galium asprellum*							X		
Vine	Japanese Honey-suckle	*Lonicera japonica*					X		X		X
Vine	Honeysuckle	*Lonicera sp.*	X								
Vine	Virginia Creeper	*Parthenocissus quinquefolia*	X	X			X				X
Vine	Wild Buckwheat	*Polygonum convolvulus*					X				
Vine	Climbing False Buckwheat	*Polygonum scandens*	X	X			X				
Vine	Roundleaf Green-brier	*Smilax rotundifolia*					X				
Vine	Climbing Night-shade	*Solanum dulcamara*	X				X				
Vine	Black Nightshade	*Solanum nigrum*	X				X				
Vine	Poison Ivy	*Toxicodendron radicans*	X				X				
Vine	Grape	*Vitis spp.*	X								

APPENDIX A

Current Research on Wader and Cormorant Nesting Islands, NY/NJ Harbor

Below is a list of other known projects conducted in 2007 either directly or indirectly related to the Harbor Herons or the islands on which they nest. Contacts listed are familiar with impacts to colonial waterbirds as they relate to the following projects, though they may not be the official representative/organization leading the project. This is likely an incomplete list, though we would like to inform the readers of this report with any research conducted on current or former wading bird colonies in the metropolitan NY/NJ area. Please contact the author (abernick@akrf.com) to inform him of your recent or ongoing research projects.

Arthur Kill Wildlife Refuge Concept, Sweetbay Magnolia Conservancy. Contact: Richard Lynch, Sweetbay Magnolia Conservancy.

Asian Longhorned Beetle (ALB) Cooperative Eradication Program in the New York Metropolitan Area, Prall's Island. March-April 2007. Contact: Christine Markham, USDA-APHIS.

Double-crested Cormorant diet study, CUNY-Queens College, April-August 2007. Contact: Colin Grubel and Dr. John Waldman, CUNY-Queens College.

Double-crested Cormorant population dynamics, New York Bioscape Initiative/ Wildlife Trust, May-August 2007. Contact: Dr. Susan Elbin, Wildlife Trust.

Habitat Restoration on North Brother Island, NYC Department of Parks and Recreation, Ongoing. Contact: Tim Wenskus, NYC Department of Parks and Recreation.

Habitat Restoration and final capping activity for the proposed Fresh Kills Park (in the vicinity of Isle of Meadows), NYC Department of Parks and Recreation/ New York City Department of Sanitation. Contact: Michael Feller, NYC Department of Parks and Recreation – Natural Resources Group.

Metapopulation modeling of wading bird nesting in the NY/NJ Harbor, NJIT/ Rutgers University, Ongoing. Contact: Gareth Russell, NJIT/Rutgers U.

Vegetation surveys on South Brother and Hoffman Island, Wildlife Trust, August-September 2007. Contact: Elizabeth Craig, Columbia University.

Webcam project on Goose Island, NYC Audubon and NYCDPR, April – October 2007. Contact: Glenn Phillips, NYC Audubon.