

NEW YORK CITY AUDUBON'S HARBOR HERONS PROJECT:

2009 INTERIM NESTING SURVEY

22 December 2009

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New York City Audubon's Conservation Programs are made possible by the leadership support of The Leon Levy Foundation and Mary and Joseph Fiore.

Additional support for the Harbor Herons Nesting Surveys comes from the ConocoPhillips Bayway Refinery.

This report should be cited as:

Craig, E. 2009. New York City Audubon's Harbor Herons Project: 2009 Interim Nesting Survey. New York City Audubon, New York, NY.

Abstract

New York City Audubon's Harbor Herons Project Interim Nesting Survey of the New York Harbor and surrounding waterways was conducted between 18 May and 1 June 2009, with additional nesting observations later in June and July. This report summarizes long-legged wading bird, cormorant, and gull nesting activity observed on selected islands, aids to navigation and at one mainland colony in 2009.

Species summaries: Nine species of long-legged wading birds nested on nine islands in NY Harbor. These species, hereafter collectively referred to as waders, included Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Yellow-crowned Night-Heron, Little Blue Heron, Tricolored Heron, Cattle Egret, and Green Heron. Between the 2008 and 2009 interim surveys, population increases were observed for the Black-crowned Night-Heron, Yellow-crowned Night-Heron, Snowy Egret, and Glossy Ibis, and a population decrease was observed for the Great Egret. The Tricolored Heron, Little Blue Heron, Green Heron, and Cattle Egret continued to nest at low numbers. Black-crowned Night-Herons were typically the numerically dominant nesting species in mixed-species colonies. A total of 1,183 Double-crested Cormorant nests were observed, representing a decline from the 2008 total of 1,333 nests. As all potential colony sites in NY Harbor were not surveyed in 2009, system-wide species totals are not presented in tables. Gull and tern nest estimates were incomplete in 2009, and should not be interpreted as declines.

Island summaries: The largest species diversity was observed on Canarsie Pol (eight species). The greatest total number of nests was observed on Hoffman Island (542 nests), surpassing South Brother Island, which had been the largest wader colony in previous years, and continued to support a large portion of the wader community in 2009 (445 nests). No active wader nests were observed on the three islands in the Arthur Kill and Kill Van Kull. Following an eight-year decline, this year marks the second consecutive year in which no waders were observed nesting on North Brother Island. Wader nesting activity on Huckleberry Island continued to persist at low levels. Mainland nesting of Yellow-crowned Night-Herons was observed at the Redfern Houses colony in Far Rockaway, where 59 nests were observed. Double-crested Cormorants nested on seven islands, and cormorant nesting activity declined at all major nesting locations.

Additional cormorant nests were observed on aids to navigation in the Kill Van Kull, Arthur Kill and northwestern Raritan Bay. Herring and Great Black-backed gulls continued to nest throughout the harbor, although a total nest count was not conducted in 2009.

Introduction

New York City Audubon's (NYC Audubon) 2009 Harbor Herons interim nesting survey marks the 24th consecutive year of this project. The primary objective of the surveys is to monitor the population status of wading birds (i.e. herons, egrets, ibis) and cormorants on select islands in New York/New Jersey Harbor and surrounding waterways, while also noting the presence of other nesting bird species and current nesting habitat.

In Fall 2004, NYC Audubon made a decision to shift the Harbor Herons Nesting Survey from an annual to a triennial schedule (with the next complete survey scheduled for Spring 2010), and in intervening years to conduct interim surveys on islands where nesting occurred in the prior year.

The US Army Corps of Engineers and The Port Authority of New York & New Jersey draft "Comprehensive Restoration Plan for the Hudson-Raritan Estuary" and the Harbor Herons Subcommittee of the Harbor Estuary Program's draft "Harbor Herons Conservation Plan" are each slated for publication in 2010. Taken together, these two documents provide historical perspective of Harbor Herons and their breeding and foraging habitat, identify threats to the persistence of these species in the harbor, and lay out a plan of action for protecting these birds in the future.

This report summarizes nesting activity of long-legged wading birds, cormorants, and gulls observed on selected islands, aids to navigation and at one mainland colony documented during the 2009 field season, between 18 May and 1 June, with additional nesting observations later in June and July. The primary objectives of the 2009 interim survey were to: (1) monitor the population status of long-legged wading birds (i.e. herons, egrets and ibis) cormorants, and gulls on selected islands; (2) document nesting habitat used by long-legged wading birds and cormorants; and (3) record the presence of other important nesting or migratory bird species. Monitoring long-term trends and short-term conditions in long-legged wading bird and cormorant nesting populations in NY 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.

Methods

The 2009 survey followed field methods designed for previous Harbor Herons Project nesting surveys [Katherine Parsons (1986-1995), 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 (Litwin et al. 1993). All counts were conducted between 6:00AM and 4:00PM, and under clear conditions without rainfall, high winds (>8 knots), or temperatures above 80°F. Most counts were conducted once from 18-30 May; additional observations were made between early June and July (see Table 1 for dates).

Islands surveyed in 2009 (Table 1, Figure 1) 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); and two in the Hutchinson River/Long Island Sound area (Goose and Huckleberry islands). Partial colonial waterbird estimates were conducted at three islands in Jamaica Bay: Canarsie Pol, Elders Point West, and Subway Island. Additionally, observations of (1) Double-crested Cormorant nests on aids to navigation (i.e., channel markers and beacons) in the Kill Van Kull, Arthur Kill and northwestern Raritan Bay and (2) Yellow-crowned Night-Heron nesting at a mainland colony are also presented below.

These islands were surveyed by a research team consisting of the author, volunteers from NYC Audubon and other organizations, and staff from New York City Department of Parks and Recreation (NYCDPR) and the National Park Service (NPS). Double-crested Cormorant counts were conducted by the author with Susan Elbin and numerous volunteers as part of an ongoing study of cormorant population dynamics, habitat use, and foraging ecology in NY/NJ Harbor. Surveys at Goose and Huckleberry islands were conducted jointly with David Künstler (NYCDPR, Van Cortlandt & Pelham Bay Parks Administrators' Office). Surveys of islands in the Arthur Kill and Kill Van Kull were conducted by Alexander Summers (NYCDPR). Don Riepe of the American Littoral Society/Jamaica Bay Guardian provided information on colonial waterbird activity in Jamaica Bay.

Surveys were conducted by one or two teams of researchers lead by the author and trained volunteers. Groups 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 was composed of 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 presence of young, eggs and clearly discernable 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'. Old or unused nests were noted in the count as 'empty', but not included in the final tally of active nests. Nesting vegetation (i.e., tree, shrub, or

vine species) was recorded for all species whenever possible by observers skilled in plant identification.

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. In addition, observations of nesting activity on aids to navigation were made from distances of 10 to 20 meters.

Numbers of adult Great Black-backed and Herring Gulls were estimated at selected colonies. When adults were counted in the vicinity of selected colonies, a nest was assumed present for each adult observed, as one-half of adults are assumed to be foraging away from the nesting colony during daytime (see Litwin et al. 1993; Kerlinger 2004).

Transportation and Permits

Boat access to islands was provided by Alexander Summers and Nathanael McVay of the New York City Department of Parks and Recreation-Natural Resources Group, Don Riepe of the American Littoral Society/Jamaica Bay Guardian, John Burke of the Huckleberry Indians, and NYC Audubon.

Permits were issued by the NYCDPR 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 authors wish to thank Ellen Pehek and Michael Feller of NYCDPR, George Frame and David Taft of NPS, Kim Tripp and Jessica Browning of NPS-Jamaica Bay Institute, and Richard Tashjian of the Huckleberry Indians for assistance during the permitting process.

Acknowledgements

We thank all volunteers (noted by name in the island profiles), organizations and agencies who participated in the 2009 surveys.

The author wishes to acknowledge NYCDPR for its continuing support and partnership in the Harbor Herons Project, particularly Michael Feller, Alexander Summers, Nathanael McVay, David Künstler and Ellen Pehek. NPS provided support and allowed access to islands within Gateway National Recreation Area for the Harbor Herons Project surveys. George Frame, Dave Taft, Kim Tripp and Jessica Browning provided assistance in the permitting process. Don Riepe of the American Littoral Society/Jamaica Bay Guardian continued to provide critical information and assistance on Jamaica Bay populations. Joseph Pane, Michelle Gibbons and Chip Hamilton of the New York State Department of Environmental Conservation (NYSDEC) provided their expertise and insight, which has aided NYC Audubon in coordinating the NY Harbor surveys within NYSDEC's Long Island Colonial Waterbird and Piping Plover Survey timeframe. The author would like to particularly thank Susan Elbin (NYC Audubon), Andrew Bernick (AKRF), and Chip Weseloh (Canadian Wildlife Service) for their training, editorial remarks, advice, and support.

Results

Overview:

In 2009, nine species of long-legged 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; hereafter referred to collectively as waders) were observed nesting on nine islands (Table 2). The three most active nesting colonies, with the greatest number of nests and diversity of nesting species, were Hoffman Island, South Brother Island, and Canarsie Pol. Islands with declining trends in previous years (i.e., Huckleberry Island and North Brother Island) continued to exhibit little to no nesting activity. Islands where small numbers of waders had nested in previous years (i.e. Swinburne Island, Subway Island, and Elders Point Marsh West) continued to support low numbers of wader nests. The Arthur Kill/Kill van Kull complex (Isle of Meadows, Prall's Island, and Shooter's Island), which was the core of NY Harbor's breeding wader community from the 1970s to the late 1990s, continues to show no sign of wader nesting activity.

For islands where systematic surveys were conducted, nesting appeared to decrease slightly from 2008 levels for Great Egret. Black-crowned Night-Heron, Glossy Ibis and Snowy Egret either remained stable or exhibited increases over 2008 nesting activity at the three main colony sites: Hoffman Island, South Brother Island, and Canarsie Pol. Overall, both Black-crowned Night-Herons and Snowy Egrets increased by 36%, and Glossy Ibis have increased by 17% over 2008 nesting observations. Black-crowned Night-Heron remains the numerically dominant nesting species on islands that were systematically surveyed in 2009. Yellow-crowned Night-Heron populations have increased at both mainland and island nesting colonies. Tricolored Herons, Little Blue Herons and Cattle Egrets continue to nest in low numbers in NY Harbor. Cattle Egrets and Tricolored Herons were confirmed as nesters on Canarsie Pol only. Green Herons were rarely observed, and because this species often nests in mainland habitats, the harbor-wide population of Green Herons is not well estimated by these surveys. This year's observation of one Green Heron nest was the first record of this species nesting on Swinburne Island.

Data on wader nesting vegetation and nest contents for South Brother and Hoffman islands are provided in Tables 5-8. Incidental bird observations are provided in the island accounts below. It is clear that numerous neotropical migrants and breeding birds continue to use islands in the Arthur Kill and Kill Van Kull; plans for habitat restoration projects should take this into account.

Island Accounts:

Hutchinson River/Long Island Sound:

Huckleberry Island (10 acres)

28 May 2009, 9:50-11:30AM.

By the author, David Künstler, Susan Elbin, Kate Ruskin (NYC Audubon), John Rowden (NYC Audubon), and John Burke (Huckleberry Indians, LLC).

The Huckleberry Island nesting survey revealed three Black-crowned Night-Heron and four Great Egret adults. Each bird was assumed to represent one nesting pair (Table 2). This is a slight increase from the two nests observed in 2008. Double-crested Cormorants (306 nests) exhibited a 22% decrease from 2008 (375 nests). Nine Herring Gull and seven Great Black-backed Gull adults were observed. Four adult American Oystercatchers were observed although no nests were confirmed. Other bird species observed on the island included Gray Catbird, Northern Cardinal, Common Grackle, Song Sparrow, Red-winged Blackbird, Eastern Towhee, Black-and-White Warbler, and European Starling.

Wader nests were located in the center of the island within an area dominated by Norway Maple, Black Cherry, and Multiflora Rose. Appropriate nesting habitat appears to be present within the central and western sections of the island, so observed declines may be caused by the presence of nest predators (i.e., raccoon tracks were observed on the island) and/or human activity during the breeding season. Authorized use of the island by the property owners appears to be limited (J. Burke, Huckleberry Indians, pers.comm.), while unauthorized visitation remains a source of human disturbance that may escape detection. Double-crested Cormorants have continued to nest in the eastern section of the island, which was formerly populated by herons and egrets. Competition for nesting sites between waders and cormorants may be a factor in the observed wader declines.

Wader nesting activity on Huckleberry Island has continued to decline over the past decade (-95% since 2001, when 140 nests were observed), and continued monitoring of this colony is imperative. NYC Audubon and NYCDPR-NRG will work closely with the Huckleberry Indians to insure necessary researcher access to this island, and to understand and address any potential factors contributing to the continued decline. Huckleberry Island has been a critical nesting site for both waders and cormorants in the NYC area. Nearby David's Island may also provide suitable nesting habitat for waders, and this island should be monitored for future nesting activity. No nesting activity was apparent in 2009.

Goose Island (1 acre)

18 May 2009, 10:20-11:25AM.

By the author, Dave Künstler, Michael Feller and Kate Ruskin.

Goose Island supported 102 wader nests, a slight decrease from 2008 (-4%). Nesting by Black-crowned Night-Heron, Great Egret, and Snowy Egret nests was confirmed. Yellow-crowned Night-Heron and Little Blue Heron nesting activity was observed in 2008 but absent from the island this year. A single Great Black-backed Gull nest was present on the northwest side of the island as in previous years. Künstler (2007) presented a detailed treatment of Goose Island bird populations and vegetation from 1996-2006.

Mammals have been noted on Goose Island in past seasons (Raccoon and Virginia Opossum); a lawn chair and clothing were noted on the east side of the island as in previous years, suggesting continued, unauthorized, human disturbance (Figure 2).

A 'HeronCam' was placed on the island in 2007 in a joint project between NYC Audubon and NYCDPR. The HeronCam is available for public viewing via NYC Audubon's Harbor Herons website (Figure 3).

East River

North Brother Island (19 acres)

22 May 2009, 9:00AM – 1:00 PM.

By the author, Susan Elbin, Michael Feller, Alexander Summers, Jim Lemyle (NYCDPR), Kate Ruskin, Daniel Ross (Channel Thirteen) and Bijon Rezvani (Channel Thirteen)

No active Black-crowned Night-Heron nests were located on the island. Gull nesting appeared to be reduced from previous years, and typically occurred on the roofs of various hospital buildings on the island. Two Great Black-backed Gull and eight Herring Gull nests were observed. American Oystercatcher vocalizations were heard on the island, and this species may be nesting in the area. Waterfowl observed and possibly nesting on the island included two Mallards, one Gadwall, two American Black Ducks, and nine Canada Geese. A Mute Swan was observed on the North West shore of the island, although no nesting activity was observed. Other species encountered were American Crow, Fish Crow, Blue Jay, European Starling, Common Grackle, Barn Swallow, Song Sparrow, Gray Catbird, Eastern Towhee, Yellow Warbler, Common Yellowthroat, Warbling Vireo, Cedar Waxwing, Northern Cardinal, Mourning Dove, and Osprey.

During an earlier visit to North Brother Island on 26 March 2009, Andrew Bernick observed evidence of owl activity (feathers of several bird species including Northern Flicker, Downy Woodpecker, and Blue Jay, as well as two owl pellets, one likely containing the remains of a Norway rat) under a large linden tree in the central portion of the island. No owl nesting activity was observed on North Brother Island, although two fledgling Great Horned Owls were observed on adjacent South Brother Island during the survey on 20 May 2009. No mammals were directly observed on North Brother Island, although Raccoon tracks were prevalent within several buildings during the 26 March visit (Figure 4). This may offer some insight into the reduced Black-crowned Nigh-Heron breeding activity on North Brother Island in recent years.

A major habitat restoration project was undertaken by NYCDPR 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. Tim Wenskus (NYCDPR) reported on restoration activities on North Brother Island in 2009. Although visits to the island for restoration activities were limited this year, NYCDPR conducted inspections of the two original plantings, and follow-up treatments were applied to both plantings. The planting by Riverside Hospital performed well in 2009 but was weedy. Adjacent invasive vines were not treated as part of the original clearing and planting, which allowed them to seed into the planting. Approximately half of the planting was weeded thoroughly for vines, ailanthus and mulberry. Completion of this weeding is all that will be required in 2011. The second planting, by the former church, did not perform as well. Mortality of the planted stock was above what NYCDPR anticipated, and vines from adjacent

areas had colonized the site. Upon completion of a course of vine removal, it became apparent that additional planting would be needed at this site to meet the goals of the project. This planting may occur as early as fall of 2010 as resources and logistics allow. In addition, the area surrounding the former church succumbed almost completely to vine invasion, and no longer provided suitable nesting habitat in 2009. In conjunction with the reinstallation of the original plantings, this site should also be planted with an appropriate mix of trees and shrubs in fall 2010. Additional vine removal occurred in 2009 as well, primarily in the north half of the island. Treatment of the kudzu infestation surrounding the coal dock continued at a lower intensity than in 2008. Should resources permit, these treatments will be continued in 2010, with the goal of completing the removal of kudzu from North Brother Island.

South Brother Island (12 acres)

20 May 2009 from 10:10AM – 12:45PM

By the author, Susan Elbin, Michael Feller, Nate McVay, Kate Ruskin, Colin Grubel (Queens College), and Kim Mendillo (NJ Audubon)

A total of 445 nests of five wader species (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, and Yellow-crowned Night-Heron; see Table 2) was noted throughout the island. This represents a 5% decrease from 2008. This colony was the second largest wader colony in the NY Harbor in the 2009 breeding season. Double-crested Cormorants (231 nests) exhibited a 29% decrease in nest numbers from 2008, and primarily occupied the center and northeastern areas of the colony. Based on adults present, an estimated 12 Herring Gull pairs and 49 Great Black-backed Gull pairs nested on the Island; a decrease from the 49 Herring and 88 Great Black-backed gull pairs observed in 2008.

Additional observations of adult birds in the interior of the island, in areas omitted during the survey on 20 May, were made on 15 June and incorporated into the report according to the assumption that one adult bird represents one active nest.

Waders nested in 10 species of trees and shrubs on South Brother, as well as tree/shrub/vine arrangements (Table 5). Black-crowned Night-Herons nested predominantly in Box Elder, Mulberry species, and Black Cherry, with and without the presence of Oriental Bittersweet vines. Snowy Egrets nested more often in tangles of Oriental Bittersweet and Multiflora Rose than any other tree or shrub. Great 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 Island included a stand of locust trees in the center of the colony, where the majority of nests were located, as well as Mulberry species, Black Cherry, and other tree species covered with Oriental Bittersweet. Cormorants therefore exhibit nest-site preferences in common with wader species, and may compete with waders for these nest-sites in some instances.

Nest content data were collected on South Brother Island (Table 6). Other bird species observed included Great Horned Owls (two fledglings; Figure 5) and two American Oystercatcher adults (possibly the same individuals noted on North Brother Island on 20 May).

The purchase of South Brother Island, which is currently the second largest wader colony in NY 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. NYC Audubon will continue to advocate for maintaining the island as a refuge for nesting colonial waterbirds.

A potential concern is that one of the prevalent tree species used by nesting waders, 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 the complete removal 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.

Mill Rock (3 acres)

20 May 2009, 1:45-2:45 PM

By the author, Susan Elbin, Kate Ruskin, and Kim Mendillo.

107 wader nests were observed on Mill Rock Island, a 149% increase from the last survey conducted in 2007. Four species of waders (Black-crowned Night-Heron, Great Egret, Snowy Egret, and Yellow-crowned Night-Heron) were observed nesting on this Island. Eight Herring Gull and nine Great Black-backed Gull nests were confirmed. Eight Canada Goose nests were confirmed.

U Thant (1/4 acre)

22 May 2009, 1:45-1:50 PM

By the author, Susan Elbin and Kate Ruskin.

U Thant was surveyed from a boat with binoculars, approximately 10 meters from shore. 30 Double-crested Cormorant nests were observed on the island both on the metal arch sculpture and in trees (Figure 6); approximately the same number observed in 2008. Based on adults present, an estimated 10 pairs of Great Black-backed Gulls and 11 pairs of Herring Gulls nested on the island.

Staten Island – Arthur Kill and Kill Van Kull

Isle of Meadows (101 acres)

1 June 2009, 9:35-11:30 AM

By Alexander Summers

No waders, cormorants, or gulls were observed, nor were there any nests that looked recently active at the time of the survey.

Evidence of White-tailed Deer 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 since 2006, a Red-tailed Hawk nest was discovered near the edge of the formerly active part of the colony, in a mature Black Cherry, with one dead nestling present. Additional species observed were Mallard (1 male, 1 female),

Canada Goose, Red-winged Blackbird, Yellow Warbler, Grey Catbird, Brown Thrasher, Common Yellowthroat, House Wren, Eastern Towhee, Willow Flycatcher, Song Sparrow, Tree Swallow, American Goldfinch, Northern Cardinal, and Northern Harrier (female).

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 ALBs, the island is at risk for possible ALB infestation. The island should be carefully monitored in future years.

Prall's Island (80 acres)

1 June 2009, 11:35 AM-1:30 PM

By Alexander Summers

Prall's Island, the site of the most recent Black-crowned and Yellow-crowned Night-Heron nesting attempts off western Staten Island, was inactive. Efforts to control an Asian long-horned beetle (ALB) infestation on the island in March-April 2007 resulted in the removal of most suitable nesting trees. Several invasive woody plant species, including Glossy Buckthorn (*Frangula alnus*) and Callery Pear (*Pyrus calleryana*), have colonized many of the cleared areas on Prall's Island; a long-term restoration strategy is warranted in the interest of restoring native plant communities to the island.

Continued use of the island by White-tailed Deer was apparent. Additional species observed on or flying over the island included Canada Goose, Mallard, American Black Duck, Herring Gull, Double-crested Cormorant, Black-crowned Night-Heron, Great Egret, Tree Swallow, Boat-tailed Grackle, Red-winged Blackbird, European Starling, Marsh Wren, House Wren, Carolina Wren, Common Yellowthroat Song Sparrow, Yellow Warbler, American Robin, Grey Catbird, American Goldfinch, Northern Cardinal, Brown Thrasher, Barn Swallow, Eastern Towhee, Red-tailed Hawk, Osprey, Wild Turkey, and American Woodcock (1 female with 3 chicks).

Shooter's Island (48 acres)

1 June 2009, 2:05-3:05 PM

By Alexander Summers

No waders were observed on, or in the vicinity of, Shooter's Island, which appears to have habitat suitable for waders. There continues to be no sign of recent human activity at the former encampment near the south side of Shooter's Island.

The Double-crested Cormorant colony situated on dry docks and other wreckage west of Shooter's Island decreased to 20 nests from the 23 active nests observed in 2008. Five Herring Gull pairs were observed on the island. Additional species observed included Gadwall, American Black Duck, Laughing Gull, Tree Swallow, Barn Swallow, Song Sparrow, Northern Cardinal, Yellow Warbler, House Wren, Grey Catbird, Turkey Vulture, and Osprey.

Hoffman Island (10 acres)

19 May 2009, 10:15 AM-1:30 PM

By the author, Susan Elbin, Alexander Summers, Kate Ruskin, Kathy Garofalo, Bey Devletian, and Charlie Clarkson.

Hoffman Island had the largest number of wader nests in the NY Harbor in 2009. There were 542 nests of seven wader species observed, including Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Yellow-crowned Night-Heron, and Little Blue Heron. No Cattle Egrets were observed on the island. Vegetation containing wader nests included Black Cherry, Mulberry species, Multiflora Rose, Privet, Box Elder, Hackberry, Lombardy Poplar, and large masses of Oriental Bittersweet; waders also nested in various tree/bittersweet and tree/rose arrangements (Table 7). Wader nest content data were collected on Hoffman Island (Table 8).

There were 225 Double-crested Cormorant nests observed on Hoffman Island in 2009, a 4% decrease from the previous year. Cormorant nests on Hoffman Island were located approximately 10 to 20 meters up in Black Locust trees, which have not been used previously as nesting trees by waders. From 2003 to 2006, Double-crested Cormorant nesting expanded across the southern end of the island, into areas formerly used by waders. In 2008, the first nests were noted on the north side of the island. Cormorant nests were in close proximity to wader nests in some locations, and wader nests appeared to be more concentrated in the center of Hoffman Island than in previous years. Cormorants maintained the same general nesting locations in 2009.

Based on adults present, an estimated 100 pairs of Herring Gulls and 60 pairs of Great Black-backed Gulls nested on the island. Additional species observed included Common Yellowthroat, Song Sparrow, Northern Cardinal, Red-winged Blackbird, Common Grackle, Fish Crow, Warbling Vireo, and Spotted Sandpiper.

Swinburne Island (4 acres)
30 May 2009, 9:30-11:50 AM
By the author and Susan Elbin.

A total of 288 cormorant nests was observed, a 2% decrease from 2008. Nests were located on the remains of buildings (Figure 7), and in several Hackberry, Black Locust, and Mulberry trees. One Black-crowned Night-Heron (Figure 8) and one Green Heron nest (Figure 9) were observed during the survey. This is the first documented Green Heron nest on Swinburne Island; nesting activity was reconfirmed in June during cormorant banding activities, with three Green Heron chicks observed in the nest. Based on adults present, 133 pairs of Herring Gulls and 120 pairs of Great Black-backed Gulls nested on the island.

Jamaica Bay

Elders Point Marsh (21 acres)
27 May 2009, 10:40-11:00 AM
By the author with Don Riepe, Alexander Summers, Kate Ruskin and Charlie Clarkson

During the 2009 ground survey of Elders Point Marsh West, 83 Double-crested Cormorant nests were observed; a 5% increase over observed 2008 activity. This is the first island within Jamaica Bay where Double-crested Cormorants have been confirmed to nest since the Harbor Herons Project began reporting on the area in 1998. This expansion of Double-crested Cormorant nesting activity into Jamaica Bay should continue to be closely monitored.

Three Great Egret nests were confirmed, marking an increase from the one Great Egret nest

observed in 2008. One Snowy Egret nest was confirmed, with an additional 8 Snowy Egret adults standing along the shoreline. Three Canada Goose nests was confirmed. Other species observed on the island and along the shore included Ruddy Turnstone, American Oystercatcher, Brant, Herring Gull, Laughing Gull, Least Sandpiper, and Red-winged Blackbird.

Elders Point Marsh West is currently under construction for a marsh restoration program through the U.S. Army Corps of Engineers (USACE). In December 2009 all of the vegetation and trees were removed from the island, and sand is being deposited on the island as substrate for the future marsh. Colonial waterbird nesting activity is unlikely to continue on this island while construction is underway. Waders are unlikely to re-colonize this island due to the removal of potential nesting habitat. The restored marsh will hopefully provide productive foraging habitat for waders in the future. This island should be monitored for other colonial waterbird activity once restoration activities have been completed. Restoration is scheduled for completion in February or March 2010. USACE completed initial construction of a similar marsh island restoration project at Elders Point East in 2006-2007, which used dredged material from Rockaway Inlet. Projects aimed at restoring salt marsh acreage within the Bay are certainly justified by the substantial marsh island losses observed in recent decades. We anticipate that the removal of nesting habitat for cormorants and waders on Elders Point Marsh West may encourage these birds to move to the adjacent nesting colony on Canarsie Pol in following years. Colonization of Canarsie Pol by cormorants would be an undesirable outcome of the USACE restoration project, as nesting cormorants have the potential to threaten the valuable and diverse wader colony currently thriving on Canarsie Pol. NYC Audubon will continue to carefully monitor cormorant nesting activity in Jamaica Bay.

Subway Island (40 acres)

27 May 2009, 9:30-10:10 AM

By the author, Don Riepe, Alexander Summers, Kate Ruskin and Charlie Clarkson.

Two attentive adult Black-crowned Night-Herons were observed on the island, representing two nesting pairs. Six apparently inactive though well-constructed heron nests were also observed. Based on adult presence, 150 Herring Gull and 60 Great Black-backed Gull nests were present on the island. Other species present included approximately 100 Double-crested Cormorants, approximately 100 Brant, 20 American Oystercatcher (including 1 banded adult and one confirmed nest), Black-bellied Plover, Willet, Song Sparrow, Barn Swallow, Least Sandpiper, Ruddy Turnstone, Common Tern, and Canada Goose.

Canarsie Pol (220 acres)

1, 2, and 13 June 2009

By the author, Don Riepe, Chris Nadeski, Charlie Clarkson, Kate Ruskin and Colin Grubel.

Due to weather constraints, a full ground survey of Canarsie Pol could not be completed in one visit. Estimates of adult waders on Canarsie Pol were combined from three separate visits to separate portions of the island in coordination with Glossy Ibis research efforts and an annual Barn Owl census. Based on adults observed on Canarsie Pol during these partial surveys, there were 115 Glossy Ibis nests (comparable to 2008), 125 Black-crowned Night-Heron nests (+108% over 2008), 89 Great Egret nests (-15% from 2008), 60 Snowy Egret nests (+36% over 2008), 18 Yellow-crowned Night-Heron nests (increased from 2 pairs in 2008), two Tricolored

Heron nests, two Little Blue Heron nests and one Cattle Egret nests. This was the only island on which Tricolored Heron and Cattle Egret nests were observed. Approximately 550 Herring Gull pairs and 100 Great Black-backed Gull pairs were observed, although the entire island was not covered during these observations; gulls nest in several large open areas throughout Canarsie Pol. Additionally, approximately 100 individual Double-crested Cormorants were observed loafing on shore. There was no evidence of cormorant nesting activity on Canarsie Pol; observed cormorants were likely adult and immature birds from the adjacent Elders Point Marsh West colony. Other species observed included Laughing Gull, American Oystercatcher, Barn Swallow, Brant, Mallard, American Black Duck, and Canada Goose.

Mainland Accounts:

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

The nesting colony of Yellow-crowned Night-Herons located at the Redfern Houses in Far Rockaway was visited on 27 May 2009 (12:30-12:45 PM) by the author, Don Riepe, Alexander Summers and Kate Ruskin. A total of 59 nests was observed (Table 2); a similar number to that observed in 2008. This is the sixth year the colony has been confirmed, and is the largest aggregation of Yellow-crowned Night-Herons in New York City. NYC Audubon 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 Yellow-crowned Night-Heron nesting have been reported on Staten Island and several sites in Nassau County in recent years.

NJDEP, with the assistance of NJ Audubon and other local stakeholders and volunteers, conducted colonial waterbird survey efforts in northern New Jersey in 2009. 66 Great Blue Heron nesting sites and 21 Night-Heron nesting sites were surveyed by staff and volunteers. Visual surveys were made where observers visited each colony three times over the course of eight months. The first visit was timed early in the season to determine if the site was active and how many adults and nests were present. The second survey was timed to coincide with late incubation/early brooding and observers count the number of adults, nests and young/fledges that were visible. Post-season nest counts were made during the final survey, which took place in late fall after the trees had lost their leaves and the birds had migrated. For more information on these surveys, contact Christina Kisiel of the NJ Department of Environmental Protection's Division of Fish and Wildlife-Endangered and Nongame Species Program (NJ DEP; christina.kisiel@dep.state.nj.us, 609-628-1919). Any person with detailed information on wader nesting in northern NJ is also encouraged to report to NJ DEP.

Hugh Carola (Hackensack Riverkeeper) has presented information on Yellow-crowned Night-Heron nesting activity in the Meadowlands and northern New Jersey at Harbor Estuary Program Harbor Herons Subcommittee meetings. Known nesting sites for this species include: Laurel Hill County Park, Schmidt's Woods Park and Harmon Cove in Secaucus, nests in the vicinity of Waldwick and Allendale in central Bergen County, and in a suburban neighborhood in Roselle,

NJ. In 2009, Yellow-crowned Night-Heron nests were observed in Schmidt's Woods (1 nest, 4 fledged young) and Harmon Cove (6 nests, a total of 7 fledged young) in Secaucus, as well as in Waldwick NJ (1 nest, 2 fledged young). A juvenile Green Heron was also observed in Mill Creek Marsh near Schmidt's Woods in Secaucus, although Green Heron nests have not yet been confirmed in this area.

Aids to Navigation:

Approximately 35 nesting pairs of Double-crested Cormorants were observed by the author and Kate Ruskin on aids to navigation in the Kill Van Kull, Arthur Kill and northwestern Raritan Bay on 23 July 2009. This included nests on five markers: ten nests on marker 1, one nest on marker 8, six nests on marker 14, 12 nests on marker 52 and six nests on marker 58. Observations were made from the NYC Audubon Zodiac at a distance of 10-20 meters from channel markers. An additional 12-15 cormorant nests and 3 Great Black-backed Gull nests were observed on aids to navigation in Newark Bay by Hugh Carola.

Species Accounts

The following species accounts offer general observations and trends summarized in Table 2. Trends discussed in the text refer to 2008/2009 population comparisons based on observations at colonies surveyed in both 2008 and 2009. The 2008 and 2009 interim nesting surveys were conducted on islands known to have active or recently active nesting colonies, although not all potential nesting islands were surveyed. The data and trends presented here should therefore be considered only as indices of the NY Harbor wader community.

Black-crowned Night-Heron: Black-crowned Night-Herons were observed on eight colonies in 2009, and were the numerically dominant species in larger, mixed-species colonies such as Hoffman and South Brother Islands. This species no longer nests on North Brother Island, a wader nesting colony active since the mid-1980s; the reason for this decline is unclear. Observed nesting activity increased by nearly 20%.

Yellow-crowned Night-Heron: While the largest island colony for this species (Canarsie Pol) was not systematically surveyed in 2008 or 2009, an eightfold increase was observed in adults counts between these two years. In addition, the mainland nesting colony at Redfern has remained stable since 2008. Observed nesting activity increased by 35%

Great Egret: Great Egrets were observed on seven islands in NY Harbor. This species exhibited declines at each of the three largest breeding colonies: Hoffman Island, South Brother Island, and Canarsie Pol. Observed nesting activity decreased by 13%.

Snowy Egret: Snowy Egrets nested on six islands in NY Harbor. Increases in numbers of nests were observed at all of these six locations. Observed nesting activity increased by 34%.

Little Blue Heron: Little Blue Herons were observed on two islands in 2009. This species approaches the northern extent of its range in the NY/NJ Harbor area, and it maintains a consistent, low-level presence in the NY Harbor breeding community. The observed nesting activity for this species was comparable in 2008 and 2009 (4 and 5 nests respectively).

Tricolored Heron: Tricolored Heron adults were noted during a partial survey of Canarsie Pol, suggesting the presence of one or more nests. This is a species more typical of southern colonies, and no increasing trends in NY 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 (McGowan and Corwin 2008).

Cattle Egret: Cattle Egrets were observed during partial surveys of Canarsie Pol. No nesting was observed on South Brother Island in 2008 or 2009, the only other site where nesting had been confirmed in recent years. Overall, the population has declined from a high of 266 nests on two islands (Prall's and Shooter's islands) in 1985 to two nests on Canarsie Pol in 2008 and 2009.

Green Heron: One Green Heron nest was observed on Swinburne Island. This species often nests in mainland habitats, and it is therefore not well represented by the Harbor Herons Project. It is likely that, as in other parts of its range, this species may be declining due to habitat development. An effort to assess the population in NY/NJ Harbor would be a worthwhile endeavor.

Glossy Ibis: An increase in Glossy Ibis nesting activity was noted on Hoffman Island, reaching levels comparable to those observed in 2007. The 115+ adults noted during partial surveys of Canarsie Pol also suggest that substantial nesting continues on that island. The majority of Glossy Ibis in NY Harbor have nested on Canarsie Pol and Hoffman Island, with one nest noted at South Brother Island as well as on Goose Island in recent years. Observed nesting activity increased by 17%.

Double-crested Cormorant: A total of 1,183 Double-crested Cormorant nests was observed on seven islands (Huckleberry, South Brother, U Thant, Hoffman, Swinburne, and Shooter's islands and Elders Point Marsh West; Tables 2 & 3). An additional 35 nests were observed on aids to navigation in Raritan Bay and western Staten Island. Decreases from 2008 levels were observed at most colonies including Hoffman Island (-4%), Swinburne Island (-2%), South Brother Island (-22%), Shooter's Island (-13%), and Huckleberry Island (-18%). Slight increases were only observed at smaller colonies including U Thant Island (+3%) and Elders Point Marsh West (+5%). An analysis of Double-crested Cormorant population trends in NY/NJ Harbor is pending.

Herring and Great Black-backed gulls: Herring and Great Black-backed gull surveys were incomplete in 2009, and the largest gull colonies in the Harbor (i.e., Canarsie Pol, Subway Island, Little Egg) were not systematically surveyed. Estimates for the number of gull nests for selected colonies are presented in Tables 2 & 4. Laughing Gull surveys are conducted annually in Jamaica Bay, though they have are not included in the Harbor Herons Project report. More information on these survey may be obtained from Laura Francoeur of the Port Authority of New York and New Jersey and Don Riepe of the American Littoral Society/Jamaica Bay Guardian.

Conclusions and Recommendations

Continued monitoring of wader populations through nesting surveys is a necessary step to comprehend species status, population trends, and overall health and persistence of the system. Due to weather we were unable to complete all of the interim surveys of target islands within the last two weeks of May, as suggested by the NYSDEC-LICW survey protocol; additional partial surveys were conducted during other island visits (i.e., for Barn Owl banding, cormorant and wader research, etc.).

At least three areas of the Harbor Herons Project survey protocol need further improvement.

1. A repeatable method to survey islands with dense vegetation is required. This somewhat intractable problem is faced by many researchers that survey islands heavily colonized by invasive species, and further efforts to design a reasonable survey technique will be explored. Implementing a grid system on larger islands with dense undergrowth would improve the quality of systematic surveys. This could be accomplished by blazing or tagging select trees along gridlines throughout the island. This system would improve the qualitative and quantitative data collected in these surveys by allowing surveyors to more accurately describe changes in the nesting community and vegetation of a specific colony segment from one year to the next. This would add a valuable spatial component to the dataset.
2. A method of quantifying productivity is necessary and should be implemented. Although some productivity data were collected (i.e., nest counts and contents), the most effective technique would likely be to mark and monitor 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 2010 nesting survey.
3. An improved habitat assessment protocol should be developed, including a rapid assessment technique, collaborating with additional botanists during breeding season vegetation surveys and conducting a non-breeding season vegetation survey.

Several major conservation challenges have been observed in recent years. The discovery of ALBs on Prall's Island in 2007 and subsequent tree removal eliminated valuable nesting habitat for colonial waterbirds. Further, observations in the 2008 season confirmed that Prall's Island is being heavily colonized by invasive woody plant species (i.e., Glossy Buckthorn, Callery Pear). Future habitat restoration at Prall's will need to take the vigorous growth of invasive species into account. Further, management of ALBs detected on island colonies may cause a similar degradation in native plant communities, which could have detrimental effects on biodiversity, as well as suitable habitat for birds and other wildlife. Tree removal and treatment is 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 colonial waterbird nesting habitat in NY Harbor. Waders 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 waders on Prall's Island and other colonies, and their removal greatly reduces the chance that waders will nest there in the near future. If ALBs are discovered on other nesting islands, the present management strategy could have serious impacts on wader breeding populations in NY 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 waders at island-colonies where ALB has not been identified. In February 2008, Joan Mahoney and Ed Bressel of the NYS Department of Agriculture and Markets provided training on recognizing ALB presence (i.e., oviposition sites, exit holes) at the National Park Service's Fort Wadsworth. Several Harbor Herons Project volunteers and field workers from several governmental agencies were in attendance.

Another conservation issue is the presence of mammalian predators, particularly raccoons, on current and former nesting islands. Mammalian predators can have severe impacts on nesting colonial waterbird populations, and evidence of predation on waders and gulls has been observed on Ruffle Bar, Goose Island, South Brother 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. For instance, raccoons present on active and potential nesting islands could be live-trapped and released in appropriate mainland habitats early in the spring before nesting activity commences.

Human disturbance on island colonies is difficult to manage in a highly urban setting. As mentioned in Bernick (2007), articles and websites that document unauthorized visitation of colonial waterbird nesting island have appeared in recent years. While an increase in waterfront activities by the public is a positive sign of a growing interest in the urban environment, any unauthorized visitation of nesting colonies requires attention and thoughtful solutions.

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 Harbor, that clearly state the restricted status of the islands and the protected status of colonial waterbirds. In addition to signage, managing agencies and stakeholders should establish a dialogue with law enforcement entities that patrol NY Harbor waters (US Park Police, NYC Police Department's Harbor Unit, and the US Coast Guard) and inform them of the security and safety threats that this type of activity poses, in addition to the ecological impacts.

Any communication concerning press coverage of NY Harbor island 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 create for 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. NYC Audubon currently runs eco-tours that offer views and narratives on islands and nesting wildlife. Additional collaborations with ACTION, Rocking the Boat and other community organizations will create opportunities for community and educational outreach through participate in observational wader studies and other conservation projects. Additionally, direct contact with individuals or organizations that have made

unauthorized visits to nesting colonies may often be productive and easily remedied, without resorting to regulatory enforcement.

The NYC Audubon Harbor Herons Project Nesting Surveys are complemented by a suite of research programs (outlined in Appendix A), many of which include banding initiatives of multiple species at nesting islands throughout the NY Harbor. In recent years, color bands have been affixed to young of the year Double-crested Cormorants, Herring Gulls, Great Black-backed Gulls, Great Egrets, Glossy Ibis, and Black-crowned Night-Herons. Color band sightings of any of these species should be communicated to the author or to NYC Audubon (bands@nycAudubon.org) giving leg band code, color, location, date, and name of observed. All band sightings should be reported to the Bird Banding Laboratory.

Additional recommendations and goals for 2010 are as follows:

- Analyze and summarize data from the NYC Audubon Harbor Heron Surveys (1986-2009) as presented by Andrew Bernick at the 2009 American Ornithologist's Union Annual Meeting in Philadelphia, PA; a summary report will be produced from these data.
- Complete and distribute the NY/NJ HEP Harbor Herons Subcommittee's Harbor Herons Conservation Plan for external review in 2010.
- A report on Double-crested Cormorant population trends in the NY/NJ Harbor area (1986-2009) is pending from NYC Audubon.
- 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 wader 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 wader and cormorant populations.
- Encourage the development of wader 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).
- 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. Guides should be available in PDF format for all volunteers.

NYC Audubon's Harbor Herons Project has included several additional programs in recent years (i.e. Harbor Herons Monitoring Program and Eco-tours) that allow for greater public participation and awareness of the 'Harbor Herons', and have strengthened NYC Audubon's role as an advocate for conserving NY/NJ Harbor's wader populations. New and vital collaborations between NYC Audubon and other organizations (i.e. NJ Audubon) 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.

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TABLES, FIGURES, AND APPENDICES

Table 1. Survey schedule for wader, cormorant and gull counts, May-July 2009

Location Surveyed	Date(s)	# of Observers	Ownership
<u>Long Island Sound</u>			
Goose Island	18 May	4	NYC DPR
Huckleberry Island	28 May	6	Huckleberry Indians, Inc.
<u>Easter River</u>			
North Brother Island	22 May	8	NYC DPR
South Brother Island	20 May	7	NYC DPR
Mill Rock	20 May	4	NYC DPR
U Thant	22 May	3	NYC DPR
<u>Arthur Kill-Kill Van Kull</u>			
Shooter's Island	1 June	1	NYC DPR
Prall's Island	1 June	1	NYC DPR
Isle of Meadows	1 June	1	NYC DPR
<u>Lower New York Harbor</u>			
Swinburne Island	30 May	2	NPS
Hoffman Island	19 May	7	NPS
<u>Jamaica Bay</u>			
Elders Point Marsh	27 May	5	NPS
Canarsie Pol	1,2,13 June	3	NPS
Subway Island	27 May	5	NPS
<u>Mainland – Far Rockaway</u>			
Redfern Houses	27 May	4	NYC Housing Authority
<u>Aids to Navigation</u>			
Raritan Bay / Arthur Kill / Kill Van Kull	23 July	2	US Coast Guard

Table 2. Wader, cormorant, and gull nesting activity on selected islands in NY/NJ Harbor and surrounding waterways, 2009. Species include Black-crowned Night-Heron (BCNH), Great Egret (GREG), Snowy Egret (SNEG), Glossy Ibis (GLIB), Little Blue Heron (LBHE), Yellow-crowned Night-Heron (YCNH), Green Heron (GRHE), Tricolored Heron (TRHE), Cattle Egret (CAEG), Double-crested Cormorant (DCCO), Herring Gull (HERG), Great Black-backed Gull (GBBG), Canada Goose (CANG), Mallard (MALL), American Black Duck (AMBDU), Gadwall (GADW), and Mute Swan (MUSW).

	Hoffman Island	South Brother Island	Canarsie Pol	Mill Rock	Goose Island	Huckleberry Island	Elders Point Marsh West	Subway Island	Swinburne Island	North Brother Island	U Thant Island	Shooters Island	Pralls Island	Isle of Meadows	Red Fern
Survey Date	19-May	20-May	1-Jun †*	20-May	18-May	28-May	27-May	27-May	30-May	22-May	22-May	1-Jun ††	1-Jun ††	1-Jun ††	27-May
Waders															
BCNH	217	274	125	92	36	3	0	2	1	0	0	0	0	0	0
GREG	113	64	89	7	28	4	3	0	0	0	0	0	0	0	0
SNEG	99	93	60	4	38	0	1	0	0	0	0	0	0	0	0
GLIB	89	1	115	0	0	0	0	0	0	0	0	0	0	0	0
LBHE	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0
YCNH	1	6	18	3	0	0	0	0	0	0	0	0	0	0	59
GRHE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
TRHE	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
CAEG	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Unidentified	20	7	0	1	0	0	0	1	0	0	0	0	0	0	0
Inactive	3	12	**	12	1	**	0	5	0	8	0	**	**	**	0
Total Active Wader Nests	542	445	412	107	102	7	4	3	2	0	0	0	0	0	59
Cormorants															
DCCO	225	231	0	0	0	306	83	0	288	0	30	20	0	0	0
Gulls															
HERG	100	12	550	8	0	9	0	150	133	8	11	5	10	0	0
GBBG	60	49	100	9	1	7	0	60	120	2	10	0	0	0	0
Waterfowl															
CANG	8	10	16	8	?	7	3	2	1	9	0	0	10	1	0
MALL	0	8	15	0	0	0	0	0	0	2	0	0	10	1	0
ABDU	0	0	0	0	0	0	0	0	0	1	0	1	6	0	0
GADW	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
MUSW	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0

† - Visit occurred outside of the count period for NYSDEC's Long Island Colonial Waterbird and Piping Plover Survey (LICW). Islands were not systematically surveyed for colonial waterbirds.

†† - Visit occurred outside of the LICW count period, though area was systematically surveyed for colonial waterbirds.

* - Nest estimates for Canarsie Pol based on a combination of ground counts and adult observations in a limited section of the island – see text for details.

** - Inactive nests were not comprehensively recorded

Table 3. Summary of Double-crested Cormorant nesting in the New York/New Jersey Harbor, May to July 2005-2009 †

<u>Island</u>	<u>Year – Number of Cormorant Nests</u>				
	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Shooter’s Island	36 ^a	54	41	23	20
Huckleberry Island	323	334	260	375	306
South Brother Island	281	326	271	297	231
U Thant	15	21	24	29	30
Hoffman Island	64	166	155	235	225
Swinburne Island	87 ^b	264 ^c	264 ^c	295 ^c	288 ^c
Elder’s Point West	0	0	31	79	83
Aids to Navigation	0 ^a	0 ^a	0 ^a	51 ^a	35 ^a
Island Total	906	1,175	1,046	1,333	1,183
Cumulative Total	906	1,175	1,046	1,384	1,218

† Data sources include NYC Audubon surveys (2005-2009), DCCO study by Susan Elbin and the author (2006-2009), and nesting surveys by Paul Kerlinger (2004) and David Künstler (2004-2006).

^a Nests observed on aids to navigation in the Arthur Kill and Kill Van Kull between the Bayonne Bridge and Goethals Bridge were included in Shooter’s Island numbers in 2004-2005. No nesting on these structures was observed in 2006-2007. In 2008 and 2009, nests on these structures were recorded separately.

^b Counts at Swinburne Island conducted from a boat ~50-100 meters from shore.

^c Counts at Swinburne Island conducted on island.

Table 4. Summary of Great Black-backed and Herring Gull nests on selected islands of the New York Harbor, 2007, 2008, and 2009.

	<u>Herring Gull</u>			<u>Great Black-backed Gull</u>		
	2007	2008	2009	2007	2008	2009
Shooter's Island	6	4	5	0	0	0
Huckleberry Island	14	9	9	31	16	7
Goose island	0	0	0	1	1	1
South Brother Island	123	131	12	93	88	49
North Brother Island	72	48	8	9	5	2
U Thant Island	75	27	11	18	N/A	10
Hoffman Island	46	161	100	142	148	60
Swinburne Island	198	N/A	133	112	N/A	120

N/A = Not surveyed for gulls by NYC Audubon

Table 5. Nesting trees, shrubs, and vines for Black-crowned Night-Herons (BCNH), Snowy Egrets (SNEG), Great Egrets (GREG), and Yellow-crowned Night-Herons (YCNH) at South Brother Island, 20 May 2009. Glossy Ibis 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.

South Brother Island - Nesting vegetation

	<u>BCNH</u>	<u>SNEG</u>	<u>GREG</u>	<u>YCNH</u>
Black Cherry	16	1	1	4
Mulberry sp.	21	1		
Box Elder	40	3		
Oriental Bittersweet	43	21	7	
Multiflora Rose	13	4		
Sycamore Maple	5	1		
Black Locust	1			
Ailanthus	7			
Hackberry	4	2		
Red Oak		1	1	

Table 6. Nest contents for Black-crowned Night-Herons (BCNH), Snowy Egrets (SNEG), and Great Egrets (GREG) at South Brother Island, 20 May 2009. Unknown nests were typically recorded when nest height and density of vegetation created difficulty in examining nest contents with mirror poles or binoculars.

South Brother Island – Nest contents

	<u>BCNH</u>	<u>SNEG</u>	<u>GREG</u>
Unknown	91	9	13
Empty	6		
1 Egg	4	2	
2 Eggs	11	3	
3 Eggs	37	12	1
4 Eggs	5	6	
5 Eggs		2	
1 Young	1		
2 Young	8	1	2
3 Young	8		1
4 Young		1	
1 Egg 1 Young	3		
1 Egg 2 Young	5	1	
1 Egg 3 Young			
2 Eggs 1 Young	2		2
2 Eggs 2 Young	1	1	
2 Eggs 3 Young			
3 Eggs 1 Young		1	
4 Eggs 1 Young			

Table 7. Nesting trees, shrubs, and vines for Black-crowned Night-Herons (BCNH), Snowy Egrets (SNEG), Great Egrets (GREG), Glossy Ibis (GLIB) and Little Blue Herons (LBHE) at Hoffman Island, 19 May 2009. Double-crested Cormorants nested predominantly in Black Locust in the southern portion of the colony.

Hoffman Island - Nesting Vegetation

	<u>BCNH</u>	<u>SNEG</u>	<u>GREG</u>	<u>GLIB</u>	<u>LBHE</u>
Black Cherry	1	3	1		
Mulberry sp	5		1	2	
Box Elder	10	19	1	5	
Oriental Bittersweet	10	9	6	5	
Multiflora Rose	8	15	2	2	1
Privet sp.		3		1	
Hackberry			1		
Lombardy Poplar	2				

Table 8. Nest contents for Black-crowned Night-Herons (BCNH), Snowy Egrets (SNEG), Great Egrets (GREG), Glossy Ibis (GLIB) Little Blue Herons (LBHE), and Yellow-crowned Night-Herons (YCNH) at Hoffman Island, 19 May 2009. Unknown nests were typically recorded when nest height and density of vegetation created difficulty in examining nest contents with mirror poles or binoculars.

Hoffman Island – Nest contents

	<u>BCNH</u>	<u>SNEG</u>	<u>GREG</u>	<u>GLIB</u>	<u>LBHE</u>	<u>YCNH</u>
Unknown	19	1	43	4	2	
Empty	22	2	5			
1 Egg	8	8	3	9		
2 Eggs	31	11	7	16		
3 Eggs	71	32	16	13		
4 Eggs	9	15				1
5 Eggs		3			1	
1 Young	1			1		
2 Young	24		4	11		
3 Young	8	7	5	1		
4 Young						
1 Egg 1 Young	2					
1 Egg 2 Young	2	4				
1 Egg 3 Young		1				
2 Eggs 1 Young	3	1				
2 Eggs 2 Young		1				
2 Eggs 3 Young						
3 Eggs 1 Young						
4 Eggs 1 Young				1		



Figure 1: Current and former nest sites in NY/NJ Harbor for waders, cormorants, and gulls. Map modified by authors from OasisNYC.



Figure 2: A lawn chair and clothing were noted on the east side of Goose Island on 18 May 2009 as in previous years, suggesting continued, unauthorized, human disturbance. Photo: © E. Craig.



Figure 3: Great Egret nests viewed during the 2009 breeding season from NYC Audubon's 'HeronCam,' placed on the island in 2007 in a joint project between NYC Audubon and NYCDPR. The HeronCam is available for public viewing via NYC Audubon's Harbor Herons website.



Figure 4: Raccoon tracks on the first floor of Riverside Hospital, North Brother Island, 26 March 2009. Photo: © A. Bernick.



Figure 5: Two Great Horned Owl nestlings on South Brother Island, 20 May 2009. This is the second consecutive confirmed nesting of Great Horned Owl on South Brother; adults have been observed on North Brother Island in recent years by NYCDPR-Natural Resources Group staff. Photo: © E. Craig



Figure 6: View of U Thant Island from its eastern shore on 22 May 2009. Cormorants were observed nesting on metal structure and in trees. Gulls were observed nesting on the shore. Photo: © E. Craig



Figure 7: Double-crested Cormorant nesting on a building on Swinburne Island 23 June 2009. This adult was banded as a pre-fledgling on Swinburne Island in 2007, and was the first banded individual observed breeding at its natal colony. Photo: © E. Craig



Figure 8: Black-crowned Night-Heron observed alongside Double-crested Cormorants on Swinburne Island, 30 May 2009. Photo: © E. Craig



Figure 9: Green Herons observed nesting on Swinburne Island, 30 May 2009. This is the first observation of a Green Heron nesting on Swinburne Island in the history of NYC Audubon's Harbor Herons Surveys. Photo: © E. Craig

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

Below is a list of other known projects conducted in 2008-2009 either directly or indirectly related to the Harbor Herons or the islands on which they nest. Please contact ecraig@nycAudubon.org to report additional research projects.

Asian Longhorned Beetle (ALB) identification training for NYC-area researchers, Fort Wadsworth, Staten Island, NY. March 2008. Contact: Joan Mahoney, New York State Department of Agriculture and Markets.

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

Citizen science monitoring program of long-legged waders of NY and NJ, NYC/NJ Audubons. Ongoing. Contact: Susan Elbin, NYC Audubon and Nellie Tsipoura, NJ Audubon.

Double-crested Cormorant diet study, CUNY-Queens College. Ongoing. Contact: Colin Grubel and John Waldman, CUNY-Queens College.

Double-crested Cormorant population dynamics. Ongoing. Contact: Susan Elbin, NYC Audubon.

Elders Point Marsh West Marsh Restoration Project, U.S. Army Corps of Engineers. Tentative Schedule 2009/2010. Contact: Melissa D.A. Alvarez, U.S. Army Corps of Engineers

Great Egret radiotelemetry study, NYC Audubon/NJ Audubon. June-August 2008. Contact: Susan Elbin, NYC Audubon.

Habitat Health, Ptilochronology and Waterbirds: A Tale of Two Estuaries. Ongoing. Contact: Charles Clarkson, University of Virginia.

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.

NY Harbor Colonial waterbird foraging ecology study: stable isotope analyses of Double-crested Cormorant, Great Egret, Herring Gull and Great Black-backed Gull feathers. Ongoing. Contact: Elizabeth Craig, NYC Audubon/ Cornell University.

Webcam project on Goose Island, NYC Audubon and NYC Department of Parks and Recreation. Ongoing. Contact: Glenn Phillips, NYC Audubon.

White Island Habitat Restoration Project, NYC Department of Parks and Recreation. Ongoing.
Contact: Michael Feller, NYC Department of Parks and Recreation – Natural Resources Group.