



NEW YORK CITY AUDUBON  
CELEBRATING 30 YEARS OF CONSERVATION

# **NEW YORK CITY AUDUBON'S HARBOR HERONS PROJECT: 2014 NESTING SURVEY REPORT**

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Prepared for:

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## Abstract

New York City Audubon's Harbor Herons Project Nesting Survey of the New York/New Jersey Harbor and surrounding waterways was conducted between 19 May and 4 June, 2014. This report summarizes long-legged wading bird, cormorant, gull, and tern nesting activity observed on selected islands, aids to navigation, and mainland sites.

*Species summaries:* Seven species of long-legged wading birds nested on seven islands in New York Harbor and at several mainland sites, while two additional wading bird species nested exclusively at mainland sites. Surveyed wading bird 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, Great Blue Heron, and Green Heron. Overall, the total number of wader nests was stable compared to last year's survey, having increased slightly (4%), and marking a rising trend since 2012. Increases since 2013 included small increases in Black-crowned Night-Heron (2%), the numerically dominant nesting species in most mixed-species colonies, Snowy Egret (14%), and Glossy Ibis (14%); a slight decrease was observed in Great Egret (-4%). Tricolored and Little Blue herons continued to nest in low numbers. Cattle Egret, observed in small numbers in years previous to 2011, was again not observed nesting in New York Harbor in 2014. Great Blue Heron and Green Heron, observed nesting in small numbers on the harbor islands in past years, were not observed nesting on the islands in 2014, but were reported nesting in small numbers at mainland sites in New York City. A total of 1,679 Double-crested Cormorant nests were observed in 2014, a 5% increase since 2013, continuing the steady population increase exhibited since 2004. Gull nesting activity was observed on eight of ten surveyed islands; no nesting activity was observed on Huckleberry or Goose Islands; North Brother and Canarsie Pol were not surveyed for gull nesting activity. Tern nesting activity was again observed on Governor's Island.

*Island summaries:* The greatest species diversity in 2014 was observed on Hoffman Island (six wader species), followed closely by Jamaica Bay's Subway and Elder's Point East Islands (each with five wader species). The greatest total number of nests was observed on Hoffman Island as in recent years, and this island exhibited a 16% increase in total nests since 2013. Nesting activity in Jamaica Bay was concentrated on Subway Island and Elder's Point East; wader populations experienced a substantial increase on Elder's Point East but decreased somewhat on Subway Island (68% and -18%, respectively), while nesting activity on Canarsie Pol was entirely absent for the second consecutive year. South Brother Island exhibited a substantial increase in nesting activity (40%) over 2013. Goose Island, abandoned shortly before the 2013 survey, likely due to a combination of human disturbance and nest predation, exhibited no nesting activity at the time of the 2014 survey. Wader nesting activity on Huckleberry Island continued at very low levels. North Brother Island exhibited no signs of wader nesting activity in 2014, marking the 7th consecutive year it has been inactive. The three islands in the Arthur Kill and Kill Van Kull (Shooters Island, Pralls Island, and Isle of Meadows), which have not hosted nesting wading birds in recent years, were not surveyed in this interim survey year. Mainland nesting of Yellow-crowned Night-Herons at the Redfern Houses in Far Rockaway remained stable for the third consecutive year. Double-crested Cormorants continued to nest on seven islands in the harbor; cormorant numbers increased 5% over 2013, continuing a six-year trend of slow increase in population in the harbor.

## **Introduction**

New York City Audubon's 2014 Harbor Herons Nesting Survey marks the 30th 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 other colonial waterbirds on select islands in New York/New Jersey (NY/NJ) Harbor and surrounding waterways, while also noting the presence of other nesting bird species and current nesting habitat.

In Fall 2004, New York City Audubon made a decision to shift the Harbor Herons Nesting Survey from an annual to a triennial schedule, and in intervening years to conduct interim surveys on islands where nesting occurred in the prior year. An interim nesting survey was conducted in 2014 (following a comprehensive survey carried out in 2013).

The US Army Corps of Engineers and The Port Authority of New York & New Jersey "Comprehensive Restoration Plan for the Hudson-Raritan Estuary" and the Harbor Herons Subcommittee of the Harbor Estuary Program's "Harbor Herons Conservation Plan" 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, gulls, and terns observed on selected islands, aids to navigation, and at mainland colonies documented during the 2014 field season, between 19 May and 4 June. The objectives of the 2014 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 other colonial waterbird 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.

## **Methods**

The 2014 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. Counts were conducted once from 19 May to 4 June, 2014.

Islands surveyed in 2014 (Table 1, Figure 1) included 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). Colonial waterbird estimates were conducted using a combination of nest and adult counts on four islands in Jamaica Bay: Canarsie Pol, Elders Point East, Little Egg Marsh, and Subway Island. Also presented in this report are observations of (1) Yellow-crowned Night-Heron nesting at a mainland colony, (2) Green Heron and Great Blue Heron nesting in small numbers at mainland sites, and (3) Common Tern nesting on Governor's Island.

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

Surveys were conducted by one or two teams of researchers, led 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 discernible nest structure. Nests beyond the reach of the mirror pole were examined with binoculars. If nest contents could 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 'inactive,' 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). After all the nests were counted in a given tree, the tree was tagged with forestry flagging tape. Boat counts were conducted on U Thant Island, where nests were counted with binoculars from a boat no more than 20 meters away from the colony.

Adult and/or nest counts of Great Black-backed Gulls and Herring Gulls were conducted at all surveyed colonies, and are presented in this report. 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 Don Riepe of the American Littoral Society/Jamaica Bay Guardian, 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, Inc.

## **Acknowledgements**

We sincerely thank all volunteers (noted by name in the island profiles), organizations and agencies who participated in the 2014 surveys.

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## Results

### Overview:

In 2014, seven species of long-legged wading birds were observed nesting on seven islands in NY Harbor and at one mainland colony (Table 2); two additional species nested exclusively at mainland sites. These nine 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, and Tricolored Heron; Great Blue Heron and Green Heron nested exclusively at mainland sites. The three most active nesting colonies, with the greatest number of nests and a good diversity of nesting species, were Hoffman Island, South Brother Island, and Subway Island. Hoffman Island was the most diverse colony in the harbor in 2014, with six species of nesting waders present. Subway Island and Elders Point East each had five species of nesting waders; the tiny, recently restored Elders Point East was also the fourth most productive colony in the harbor for the second consecutive year. Canarsie Pol in Jamaica Bay has historically been the most diverse and one of the largest wader colonies in the New York Harbor, however in 2014 there was no nesting activity on this island for the second consecutive year; our 2013 survey found no nesting activity for the first time in the 14 years that it had been surveyed. Goose Island, largely abandoned before the 2013 survey, exhibited no nesting activity in 2014, indicating that the island may have been abandoned, likely due to a combination of human disturbance and nest predation. Islands with declining trends in recent years (i.e., Huckleberry Island and North Brother Island) continued to exhibit little to no nesting activity. Islands in the Arthur Kill/Kill van Kull complex (Isle of Meadows, Prall's Island, and Shooter's Island), which were the core of NY/NJ Harbor's breeding wader community from the 1970s until the late 1990s, were not found to host nesting waders in 2013, and as a result were not surveyed during this interim nesting survey year.

2014 was an interim survey year, and the majority of comparisons noted in this report are between this year's survey and the 2013 survey—though longer-term trends are noted where deemed relevant. 2014's survey revealed the second consecutive year of increasing numbers of wading nesting pairs, following a fall in population in the two previous years, and recorded numbers are well within the range of nesting activity observed since the early 1990s. Figure 2 illustrates the nesting activity of wader species in the NY/NJ harbor over the history of these surveys, with years of uncertainty in the data indicated with gray bars. Figure 3 illustrates the shifting patterns of nesting island use over the same time period.

### Island Accounts:

#### Hutchinson River/Long Island Sound:

##### Huckleberry Island (10 acres)

27 May 2014, 9:30am-10:45am

By the author, Susan Elbin (New York City Audubon); David Künstler, Ellen Pehek, Alexander Summers (NYCDPR); and John Burke (Huckleberry Indians, Inc.)

The Huckleberry Island nesting survey revealed two Black-crowned Night-Heron nests and one Great Egret nest (see Table 2). While the Black-crowned Night-Heron nests were not accessible to check contents, they appeared active, and four adult birds were seen in the vicinity of the nests. Though six Great Egret adults were found foraging along the island's shoreline, only one nest was encountered. This year marks a continued trend of low numbers of nesting waders on Huckleberry Island, since a 20-year high of 140 nests observed in 2001. Double-crested Cormorant numbers also continued a decline observed on the island since 2010, and the 158 nests observed represent a 27% decrease from 2013. Continuing a decline over the past 20 years, no Herring Gull or Great Black-backed Gull Nests were observed; gulls have been found to be nesting in very low numbers or absent for the past five years. Two American Oystercatchers were observed on the island, likely representing one nesting pair. Five spotted sandpipers were observed, likely representing two pairs. One Mallard nest and 26 adult Canada Geese (with 15 confirmed nests) were observed. Other bird species observed on or near the island included Black Duck, Least Sandpiper, Mourning Dove, Great-crested Flycatcher, Fish Crow, Rough-winged Swallow, Barn Swallow, Yellow Warbler, Common Yellowthroat, Gray Catbird, European Starling, Northern Cardinal, Song Sparrow, Red-winged Blackbird, Common Grackle, and Boat-tailed Grackle.

Wader nesting activity on Huckleberry Island has continued to decline over the past decade and continued monitoring of this colony is imperative. The presence of predators (rats and raccoons) has been suspected as a cause of this decline; no signs of rats were encountered on this visit. New York City Audubon and NYCDPR 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 New York City area. Nearby David's Island may also provide suitable nesting habitat for waders, and this island should be monitored for future nesting activity.

#### Goose Island (1 acre)

27 May 2014, 12:30pm-2pm

By the author, Susan Elbin (NYC Audubon); David Künstler, Ellen Pehek (NYCDPR)

Goose Island, abandoned shortly before our 2013 survey was conducted, exhibited no active nesting wader activity in 2014. While the island evidenced 87 active pairs of waders shortly before our 2013 survey, during the survey itself we found only eight active nests, three dead adult waders, multiple nests with broken eggs either in or beneath the nests, and four predated Canada Goose nests. Evidence of predators themselves was clear: Raccoon droppings were observed in predated nests and on the ground, and Norway Rat presence on the island was also reported. Evidence of human presence on the island was also noted. During the 2014 survey, though no evidence of active wader nesting was found, four active Canada Goose nests were found. No gull nests were observed on the island. Evidence of human disturbance was again noted in 2014. Additional signs were posted on the island, marking it as off limits to human visitation.

Other bird species observed on the island in 2014 included Tree Swallow, Barn Swallow, Gray Catbird, Common Yellowthroat, Yellow Warbler, Common Grackle, and Baltimore Oriole.

East River:

North Brother Island (19 acres):

21 May 2014, 10:30am-11:30am

By Susan Elbin (NYC Audubon), Susan Stanley (NYCDPR)

The areas of North Brother Island that had previously supported wader nests were searched during the 2014 survey. No evidence of wader or gull nesting activity was observed, though waders were seen perched in trees on the south side of North Brother during the South Brother survey. Other species observed included Fish/Common Crow, Wood Thrush, Warbling Vireo, Yellow Warbler, Northern Cardinal, and Song Sparrow.

NYCDPR continues to conduct restoration activities on North Brother Island.

South Brother Island (12 acres)

21 May 2014, 8:45am–1pm.

By the author, Susan Elbin, Elizabeth Craig, Darren Klein (NYC Audubon); Michael Feller (NYCDPR), Alex Summers, Susan Stanley, Tyler Parlato, Joanna Peluso (NYCDPR); Erica Santana, Abigail Atkins (USDA/APHIS).

A total of 399 nests of four wader species (Black-crowned Night-Heron, Great Egret, Snowy Egret, and Yellow-crowned Night-Heron; see Table 2) was observed throughout the island. This represents a marked increase (40%) increase since 2013—an encouraging result after our 2013 survey exhibited an equivalent decrease compared to 2010 (-37%). This colony was the second largest wader colony in the NY Harbor in 2014, though not as diverse as some of the smaller colonies. For the third consecutive year, no evidence of Glossy Ibis nesting activity was observed on this island; Glossy Ibis had maintained a small breeding population over the previous 20 years. The number of Double-crested Cormorant nests decreased compared to last year (131 nests, -34% from 2013), continuing a declining trend noted over the past 20 years.

Waders primarily nested in box elder, mulberry, sycamore maple, black cherry, oriental bittersweet, multiflora rose, and wild grape. 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 box elder, mulberry, ailanthus, and black cherry. Cormorants therefore exhibit nest-site preferences in common with wader species, and compete with waders for these nest-sites in some instances. There continued to be large areas of overlap between cormorant and wader nesting habitat, including an unexpected grouping of 10 Yellow-crowned Night-Heron nests within the principal Double-crested Cormorant colony. The cormorants have been less centralized in their distribution during the past several years and are nesting throughout the colony.

Gull counts on the island produced a total of 2 Herring Gull nests (6 adults) and 21 Great Black-backed Gull nests (36 adults), a decline in both species since 2013. Other bird species observed

included Canada Goose (12 nests), Mallard (1 nest), American Oystercatcher (1 nest), Spotted Sandpiper, American Crow, Fish Crow, Gray Catbird, Cedar Waxwing, Yellow Warbler, Common Yellowthroat, Eastern Towhee, and Song Sparrow. For the second consecutive year, no evidence of Great Horned Owl nesting activity was observed. Raccoon droppings were noted, however, at the site of a predated Canada Goose nest.

Note: Herring and Great Black-backed Gulls are nesting on roof tops on neighboring Riker's Island. The population is being controlled via egg oiling, but the USDA/Aphis/Wildlife Services biologists counted 663 Herring Gull nests and 8 Great Black-backed Gull nests this year.

#### Mill Rock (3 acres)

21 May 2014, 2pm-3:20pm

By the author, Susan Elbin, Elizabeth Craig, Darren Klein (NYC Audubon)

A total of 96 wader nests was observed on Mill Rock Island, a decline of 15% compared to 2013, and a 53% decline since the colony reach its largest documented size of 203 wader pairs in 2012. Three species of waders (Black-crowned Night-Heron, Great Egret, and Snowy Egret) were observed nesting on this island. Twenty-nine Herring Gull and 18 Great Black-backed Gull nests were confirmed. Double-crested Cormorants (25 nests) were again observed nesting on Mill Rock Island; this year's count marked a 56% increase over 2013 and is the highest population noted since the species was first found nesting here in 2011. Other bird species observed on the island included Canada Goose (6 nests), Spotted Sandpiper, Swainson's Thrush, Gray Catbird, Common Yellowthroat, and Song Sparrow.

Human disturbance continued to be evident on Mill Rock Island. Man-made structures including benches and tables have persisted over the last few years. There is evidence of visitation from kayaking clubs, which must be discouraged from disturbing this growing nesting colony. Future efforts to discourage human disturbance should include increased signage on the island, particularly at the north harbor. If possible, kayaking clubs known to visit Mill Rock Island and other Harbor Herons nesting islands should be contacted and educated about the importance of maintaining zero human disturbance during the critical nesting period.

#### U Thant (1/4 acre)

4 June 2014 (cormorants); 25 May - 7 June (gulls)

By NYC Audubon Ecocruise, Jim Matthews (NYC Audubon volunteer)

U Thant was surveyed from a boat with binoculars, approximately 10 meters from shore. Thirty-four Double-crested Cormorant nests were observed on the island both on the collapsed metal arch sculpture and in trees. Approximately the same number of nests has been observed annually on this island since the colony established in 2008. A mean of 16 Great Black-backed adults and 2 Herring Gull adults was observed on the island between 25 May and 7 June.

Staten Island – Arthur Kill and Kill Van Kull

Isle of Meadows (101 acres): not surveyed in 2014

Prall’s Island (88 acres): not surveyed in 2014

Shooter’s Island (48 acres): not surveyed in 2014

Lower NY Harbor

Hoffman Island (10 acres)

19 May 2014, 9am-12:45pm

By the author, Susan Elbin, Elizabeth Craig (NYC Audubon); Don Riepe (American Littoral Society); Alex Summers, Susan Stanley, Ellen Pehek, Tyler Parlato, Joanna Pelluso (NYCDPR); Stephan Beffre (USDA/APHIS); Andrew Turk (NYC Audubon volunteer)

A total of 589 nests of at least six wader species was observed, including Great Egret, Black-crowned Night-Heron, Snowy Egret, Glossy Ibis, Little Blue Heron, and Yellow-crowned Night-Heron (See Table 2). This total constitutes a 16% increase since 2013, following several years of declining population, despite the destruction of some existing nest substrate by Hurricane Sandy in 2012. Waders primarily nested in mulberry species, multiflora rose, box elder, black locust, hackberry, oriental bittersweet, wild grape, and Virginia creeper.

A total of 835 Double-crested Cormorant nests was observed on Hoffman Island in 2014, a 37% increase from 2013, marking a continued trend of increase since this species was first recorded nesting on the island in 2002.

A total of 88 Herring and 71 Great Black-backed Gull nests was counted during the survey, marking an increase in both species over 2013 (120% and 27%, respectively). Additional species observed included Canada Goose (7 nests), Mallard, American Oystercatcher (1 pair), Spotted Sandpiper, Fish Crow, American Crow, Gray Catbird, Carolina Wren, Red-winged Blackbird, and Boat-tailed Grackle.

Swinburne Island (4 acres)

20 May 2014, 9:30am-11:50am

By the author, Susan Elbin, Elizabeth Craig, Andrew Maas (NYC Audubon).

A total of 317 Double-crested Cormorant nests was observed; a 6% decrease from 2013 and a 26% decrease since 2012. Nests were located on the remains of buildings, on the ground, and in several hackberry, black locust, and mulberry trees. The habitat on Swinburne Island was significantly remodeled during Hurricane Sandy, which removed the majority of topsoil for the island, completely or partially felled all the standing buildings, and exposed foundations that had historically not been exposed. The observed decline since 2012 may be a result of degraded nesting substrate. Eleven adult cormorants banded in previous years were observed breeding on Swinburne Island again this year; two other birds sighted had bands of unknown origin. A total

of 104 Herring Gull nests and 57 Great Black-backed Gull nests was observed, an increase of 37% and 27%, respectively. Additional species observed included Black-capped Chickadee and Red-winged Blackbird.

### Jamaica Bay

#### Elder's Point East Marsh (21 acres)

28 May 2014, 10:25am-10:50am

By the author, Adriana Palmer (NYC Audubon); Don Riepe (American Littoral Society); Steven Ball, Stefan Guelly (USDA/APHIS); Rita Mary McMahon (NYC Audubon volunteer)

Elder's Point East was recently restored in as part of a marsh restoration project undertaken in Jamaica Bay by the U.S. Army Corps of Engineers (USACE). 2014 was the fifth year since the restoration in which colonial waterbirds had the opportunity to nest on Elder's Point Marsh East, and the size and diversity of the breeding population has continued to increase. A total of 106 wader nests was observed on this island from five wader species in 2014, including Snowy Egret, Great Egret, Black-crowned Night-Heron, Tricolored Heron, and Glossy Ibis: a 68% increase from 2013, and a 489% increase from 2010, the first year nesting birds were recorded post-restoration. (Glossy Ibis were an unconfirmed sighting on our survey date; this species' presence was confirmed several weeks later.) The increased nesting activity on Elders Point East coincides with the concurrent decline and recent abandonment of nearby Canarsie Pol. Wading birds nested in trees, low branches, and on the ground. Double-crested Cormorants have moved into some territory on the northern part of the island formerly occupied by waders; the majority of waders at this colony were nesting in a broad expanse of high-tide bush on the southern part of the island. Because almost all of these nests are located within 4 feet of the ground, this colony may be particularly vulnerable to disturbance by recreational boating activity in Jamaica Bay.

A total of 179 Double-crested Cormorant nests was observed, representing less than a 1% change from 2013 numbers. Many cormorants were nesting on the ground. A total of 194 Herring Gull adults were observed; no Great Black-backed Gull adults were observed during this year's survey, though low numbers have been observed in recent years. Other bird species observed on this island included Canada Goose (one nest), seven American Oystercatcher adults, and three Mallard adults.

#### Subway Island (40 acres)

28 May 2014, 11:15am-1pm

By the author, Adriana Palmer (NYC Audubon); Don Riepe (American Littoral Society); Steven Ball, Stefan Guelly (USDA/APHIS); Rita Mary McMahon (NYC Audubon volunteer)

The Subway Island colony was the third largest nesting colony in NY Harbor in 2014. This year was the fifth consecutive year in the history of these nesting surveys in which a large group of waders was found nesting on Subway Island. A total of 307 wader nests was observed, representing five species of waders including Black-crowned Night-Heron, Glossy Ibis, Great Egret, Snowy Egret, and Little Blue Heron. This total represents a decrease of 18% since 2013. The influx of birds on Subway Island in the past five years coincided both with the abandonment

of Canarsie Pol and with the cessation of the subway line (A-train) that crosses the island. The A train was out of service after Hurricane Sandy, from 29 October through 30 May (post-survey). A total of 382 Herring Gull adults and 59 Great Black-backed Gull adults were observed. Six American Oystercatcher adults and 24 Canada Goose adults were observed on the island. Other species present included Brant, Mallard, Willow Flycatcher, American Crow, Gray Catbird, Yellow Warbler, Song Sparrow, Red-winged Blackbird, and Boat-tailed Grackle.

#### Little Egg Marsh

28 May 2014, 9am- 9:40am

By the author, Adriana Palmer (NYC Audubon); Don Riepe (American Littoral Society); Steven Ball, Stefan Guelly (USDA/APHIS); Rita Mary McMahon (NYC Audubon volunteer)

For the second consecutive year, nesting waders were observed on Little Egg, following a ten-year period in which intermittent surveying did not find evidence of nesting activity. Thirteen Black-crowned Night-Heron nests were observed, a 35% decline from our 2013 survey, and one Snowy Egret nest was observed, a first record for this island. A total of 338 Herring Gull adults and 415 Great Black-backed Gull adults were observed. Other bird species observed included American Oystercatcher (14 adults), Willet, Tree Swallow, and Song Sparrow.

#### Canarsie Pol (220 acres)

28 May 2014, 9:55am-10:10am

By the author, Adriana Palmer (NYC Audubon); Don Riepe (American Littoral Society); Steven Ball, Stefan Guelly (USDA/APHIS); Rita Mary McMahon (NYC Audubon volunteer)

For the second consecutive year, no nesting wader activity was evident on Canarsie Pol, and 2014 marks the fourth consecutive year of massive decline in nesting activity on this once productive nesting island. It is unclear why these declines have occurred, but presence of mammals on the island, including raccoons, may have caused these declines as it has done on other nesting islands in Jamaica Bay. Further investigation is highly recommended, as this island has historically been one of the largest and most diverse heron colonies within the New York Harbor system.

A landing on the southern shore of the island and partial survey of the island's shoreline revealed several foraging wading bird species; two Snowy Egrets and two Great Egrets appeared to be using the shores of Canarsie Pol as foraging grounds. Other birds observed on or near Canarsie Pol included Canada Goose (3 pairs that appeared to be on nesting territory), Brant, Herring Gull (9 adults), Great Black-backed Gull (2 adults), American Oystercatcher (4 adults), Killdeer, Willet, Ruddy Turnstone, Semipalmated Sandpiper, Willow Flycatcher, Fish Crow (2 nests, 19 adults), Gray Catbird, Northern Mockingbird, White-eyed Vireo, Yellow Warbler, Common Yellowthroat, Eastern Towhee, Song Sparrow, and Red-winged Blackbird.

#### Other Jamaica Bay islands

Other islands in Jamaica Bay, such as White Island and Ruffle Bar, were not found to host nesting waders in 2013, and as a result were not surveyed during this interim nesting survey year.

## Upper New York Bay

### Governor's Island

31 May 2014, 8:30am-10:30am

By Susan Elbin and Elizabeth Craig

Since 2008, a colony of Common Terns has nested on three abandoned piers on the southeast end of Governor's Island. The colony was officially surveyed in 2013, but access was severely restricted in 2014. We conducted nest counts on only one pier (Lima) because the other two piers (Yankee and Tango) were deemed to be structurally unsound for humans. Elbin and Craig added oyster shell nesting substrate to Lima pier prior to the breeding season; our survey of Lima pier then found 3 times the number of nests there compared to 2013: 33 nests in 2014 vs. 11 nests in 2013.

### **Aids to Navigation:**

Aids to navigation in the Kill Van Kull and Arthur Kill were not surveyed in 2014. Hugh Carola (program director, Hackensack Riverkeeper) observed 36 nesting pairs of DCCOs on aids to navigation in Newark Bay.

### **Mainland Accounts:**

The New York City Audubon's Harbor Herons Project has traditionally reported nesting activity on island colonies only. Three species of waders are known to have nested recently in mainland areas: Yellow-crowned Night-Heron, Green Heron, and Great Blue Heron.

The nesting colony of Yellow-crowned Night-Herons located at the Redfern Houses in Far Rockaway was visited on 23 May 2014 10:55am-11:45am) by the author and Kaitlyn Parkins.

A total of 41 nests was observed (Table 2) which marks the third consecutive year that this approximate number of nests was observed, since a decline was documented in 2011, following possible predation by hawks in 2010. This is the 10th year the Red Fern colony has been confirmed.

Several smaller colonies of Yellow-crowned Night-Heron have been reported on Staten Island and several sites in Nassau County in recent years. Hugh Carola 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 have included: Laurel Hill County Park, Schmidt's Woods Park and Harmon Cove in Secaucus. This year there were 10 nesting pairs at Harmon Cove, similar to numbers found there in recent years, and none at Schmidt's Woods Park in Secaucus, where low numbers have nested in recent years.

Two pairs of Green Herons nested for the second consecutive year in Brooklyn's Prospect Park; this nesting activity should be documented in future surveys. This species is also known to nest

at various mainland sites on Staten Island. One pair of Great Blue Herons nested for a second consecutive year in Staten Island's Clove Lakes Park.

### **Species Accounts:**

The species trends discussed below are based on comparisons of nesting numbers between 2013 and 2014. As our 2014 interim survey did not survey the islands off of the west coast of Staten Island, comparisons to the full survey conducted in 2013 are limited in this aspect.

Black-crowned Night-Heron (658 pairs): Black-crowned Night-Herons were observed on seven islands in 2014 (Huckleberry, South Brother, Hoffman, Mill Rock, Little Egg, Subway Island, and Elder's Point Marsh East; Table 2) and were the numerically dominant species in several mixed-species colonies including South Brother Island, Mill Rock, and Subway Island. Observed nesting activity was stable, increasing by approximately 2% harborwide.

Yellow-crowned Night-Heron (63 pairs): Yellow-crowned Night-Herons were observed on two islands (Hoffman and South Brother Islands) in 2014. Numbers of nesting pairs on islands remained relatively unchanged, though the birds have shifted somewhat in location and proportion; no birds were observed this year on Subway Island, while one pair was found on Hoffman Island. Of note this year was the presence of 10 Yellow-crowned Night-Heron nests within the main Double-crested Cormorant colony on South Brother Island; the number of nesting pairs on South Brother also increased by 91%. The largest colony, however, occurred on the mainland at Redfern Houses (41 nests)—and several other smaller colonies were again found in local New Jersey sites. See the description of these colonies above in the mainland accounts.

Great Egret (410 pairs): Great Egrets were observed on six islands in NY/NJ Harbor (Huckleberry, South Brother, Hoffman, Mill Rock, Subway Island, and Elder's Point East; see Table 2). This species continues to shift its centers of nesting activity throughout the harbor, as numbers continued low or nonexistent on Huckleberry and Goose Island, and declined on Subway Island, while other colonies (including South Brother Island and Elders Point East) exhibited increases (See Figure 4). Harbor wide, Great Egrets exhibited a 4% decrease since 2013.

Snowy Egret (239 pairs): Snowy Egrets nested on six islands in NY/NJ Harbor (South Brother, Hoffman, Mill Rock, Subway Island, Little Egg Marsh, and Elder's Point Marsh East; see Table 2). An overall increase of approximately 14% was observed harbor-wide. This species, like the Great Egret, appears to be moving its centers of nesting activity throughout the harbor; several colonies (Huckleberry and Goose Islands) remained abandoned while Mill Rock and Subway Island exhibited declines; others (including Hoffman Island, Elders Point East, and South Brother Island) exhibited increases (See Figure 5).

Little Blue Heron (10 pairs): Little Blue Herons were observed on both Hoffman and Subway Islands in 2014, as in recent years. 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/NJ Harbor breeding community.

Tricolored Heron (2 pairs): Two Tricolored Herons were observed on Elder's Point East Marsh in Jamaica Bay in 2014. 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 not observed during the 2014 survey, the fourth consecutive year this species has been absent from our survey. No nesting was observed on South Brother Island, the only site where nesting had been confirmed in recent years. The population has declined to zero from a high of 266 nests on two islands (Prall's and Shooter's islands) in 1985.

Green Heron: No Green Heron nests were observed on the island colonies in 2014, the fourth consecutive year this species has been absent. Green herons often nest in mainland habitats, and unconfirmed reports were received of nesting activity at mainland sites on Staten Island. Two pairs nested in Brooklyn's Prospect Park in 2014; nesting was also confirmed there in 2013. 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.

Great Blue Heron: No Great Blue Heron nests were observed on the island colonies this year. One pair of Great Blue Herons nested for a second consecutive year at Clove Lakes Park in Staten Island.

Glossy Ibis (174 pairs): Glossy Ibis nests were found on three islands in 2014 (nesting was observed on Subway and Hoffman islands during the survey; an unconfirmed sighting on Elders Point East during the survey was confirmed shortly post-survey). Numbers increased 14% harbor wide. This species could historically be found nesting on other islands in Jamaica Bay, as well as on South Brother and Goose Island in small numbers.

Double-crested Cormorant (1,679 pairs): Double-crested Cormorant nests were observed on seven islands (Huckleberry, South Brother, U Thant, Hoffman, Swinburne, Mill Rock, and Elder's Point Marsh East; Table 2). Shooter's Island and aids to navigation in the harbor, which have hosted nesting colonies in recent years, were not surveyed in 2014. We observed a 5% increase in cormorant nests harbor-wide since last year. Cormorant colonies must continue to be carefully monitored to determine the potential impact of cormorant nesting activity on wader nesting populations (See Figure 6). An analysis of Double-crested cormorant population trends in NY/NJ Harbor and northeast region is pending.

Herring and Great Black-backed Gulls: This year, gulls were monitored using adult counts, nest counts, or both whenever possible. Excluding Jamaica Bay and Rikers Island nesting populations, surveys of gull nests found increases in nesting pairs of Herring Gulls (58%) and Great Black-backed Gulls (28%) harbor-wide since 2013. Adult gull counts in Jamaica Bay yielded stable numbers of Herring Gulls and an increase in Great Black-backed Gulls (82%).

Common Tern: Common Terns nested at two locations in 2014: Governor's Island and Joco Marsh. Both of these locations have been active in recent years, but neither has been consistently or formally surveyed as a part of the Harbor Herons survey effort. The Common Tern is a threatened species in New York State and we recommend continued monitoring and increased conservation efforts to protect and improve these New York Harbor colonies.

## Conclusions and Recommendations

Although our 2013 report noted an apparent decline in the total number of active wader nests since the most recent previous comprehensive survey in 2010, our 2014 survey results demonstrated a second consecutive year of increasing numbers, and is well within the range of nesting activity observed since the early 1990s. More concerning than the overall decrease in nesting numbers since 2010 is the decrease in potentially suitable nesting islands, illustrated by the abandonment of Canarsie Pol and Goose Island, and the drastic declines on Huckleberry Island, all likely connected to issues of human disturbance and/or predation. It is normal for waterbird colonies to move from island to island over time, and we have observed this phenomenon in recent years with newly established and growing populations on Mill Rock Island, Subway Island, and Elder's Point Marsh East. However, it is imperative that a large number of suitable nesting islands remain available for these birds to continue to colonize and recolonize, and that when islands are abandoned, other suitable nesting islands continue to remain available.

Continued monitoring of wader populations through nesting surveys and banding is a necessary step to comprehend species status, population trends, and overall health and persistence of the system.

At least three areas of the Harbor Herons Project survey protocol need 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 and/or placing directionally marked posts 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 reproductive data were collected (i.e., nest counts and contents), this represents only a snapshot of time. The correlation between nest number and number of fledglings is the true measure of productivity. The most effective technique would likely be to mark and monitor a subset of nests within selected colonies over the breeding season.
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.

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, gulls, and other waterbirds has been observed on Ruffle Bar, Goose Island, South Brother Island, and others. Efforts to quantify mammalian presence throughout the year using camera trapping 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 nesting islands at a considerable distance from the mainland, appropriate control methods could include live-capture and relocation of mammals. For islands that mammals can reach more readily, control methods such as exclosures around nesting trees may be more appropriate.

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. Additional signs must be posted on city-owned and federally-owned islands, clearly stating 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, New York City 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/NJ Harbor islands 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. New York City Audubon currently conducts ecocruises that offer views and narratives on these islands and their nesting wildlife. Additional collaborations with 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 Harbor Herons Conservation Plan was published in 2010 (Elbin and Tsipoura, Eds. 2010). Efforts are underway to prioritize and implement recommended actions outlined in this plan. In particular, emphasis needs to be placed on the protection of important foraging areas in addition to nesting habitats.

The New York City 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, Great Egrets, Snowy Egrets, and Glossy Ibis. USFWS metal bands have been used on Herring Gulls, Great Black-backed

Gulls, and Black-crowned Night-Herons. Color band sightings of any of these species should be communicated to the author or to New York City Audubon ([bands@nycaudubon.org](mailto: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 are as follows:

- Analyze and summarize data from the New York City Audubon Harbor Heron Surveys (1986-present)
- 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. Coordinating standardized methods to allow for regional comparisons and data analysis will be critical to the success of this effort.
- 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., the Harbor Herons Foraging Study and ecocruises) 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., New Jersey 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, 19 May-4 June 2014

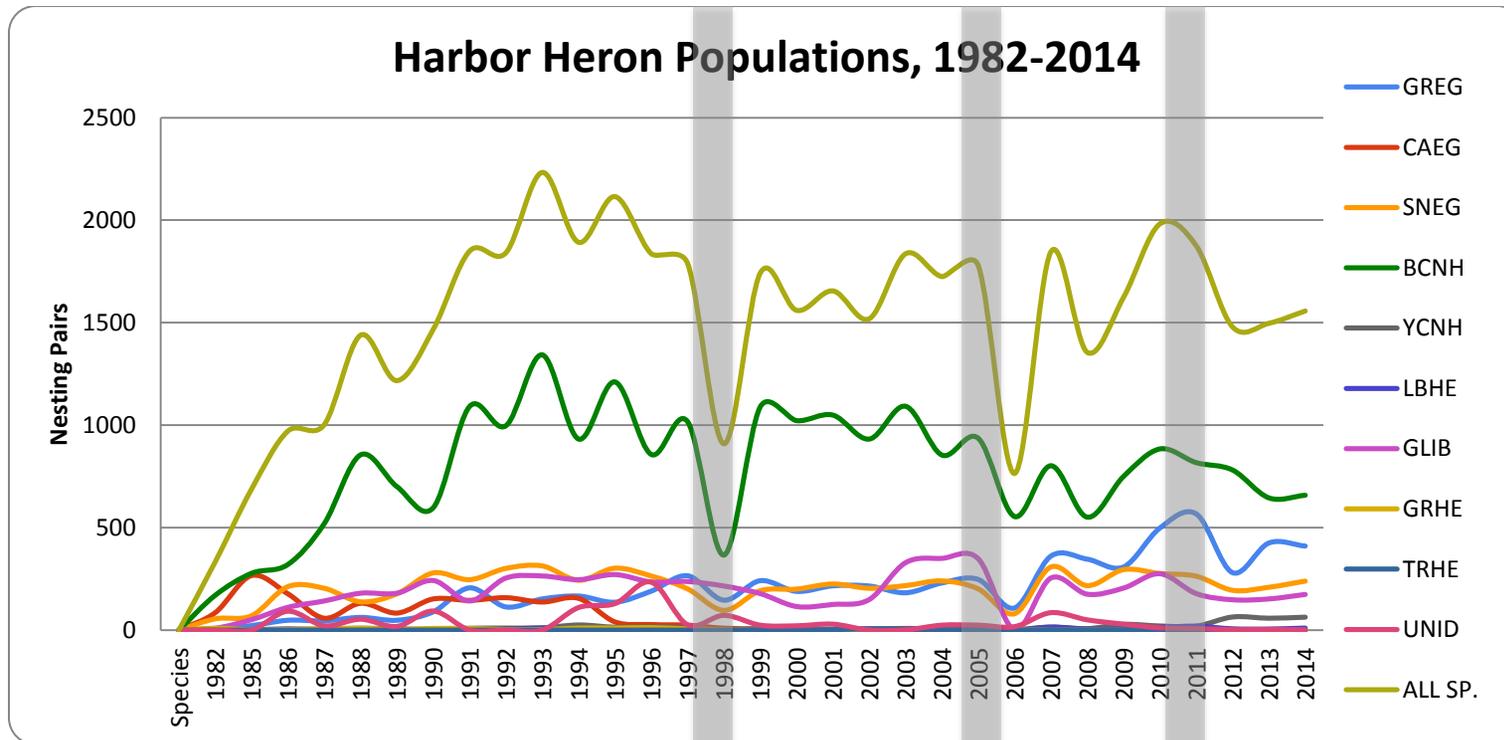
Location Surveyed	Date	# of Observers	Ownership
<u>Long Island Sound</u>			
Goose Island	27 May	4	NYC DPR
Huckleberry Island	27 May	6	Huckleberry Indians, Inc.
<u>East River</u>			
North Brother Island	21 May	2	NYC DPR
South Brother Island	21 May	11	NYC DPR
Mill Rock	21 May	4	NYC DPR
U Thant	4 June	1	NYC DPR
<u>Arthur Kill-Kill Van Kull</u>			
Shooter's Island	Not surveyed		NYC DPR
Prall's Island	Not surveyed		NYC DPR
Isle of Meadows	Not surveyed		NYC DPR
<u>Lower New York Bay</u>			
Swinburne Island	20 May	4	NPS
Hoffman Island	19 May	11	NPS
<u>Jamaica Bay</u>			
Elders Point East	28 May	6	NPS
Canarsie Pol	28 May	6	NPS
Subway Island	28 May	6	NPS
Little Egg Marsh	28 May	6	NPS
<u>Mainland – Far Rockaway</u>			
Redfern Houses	23 May	2	NYC Housing Authority



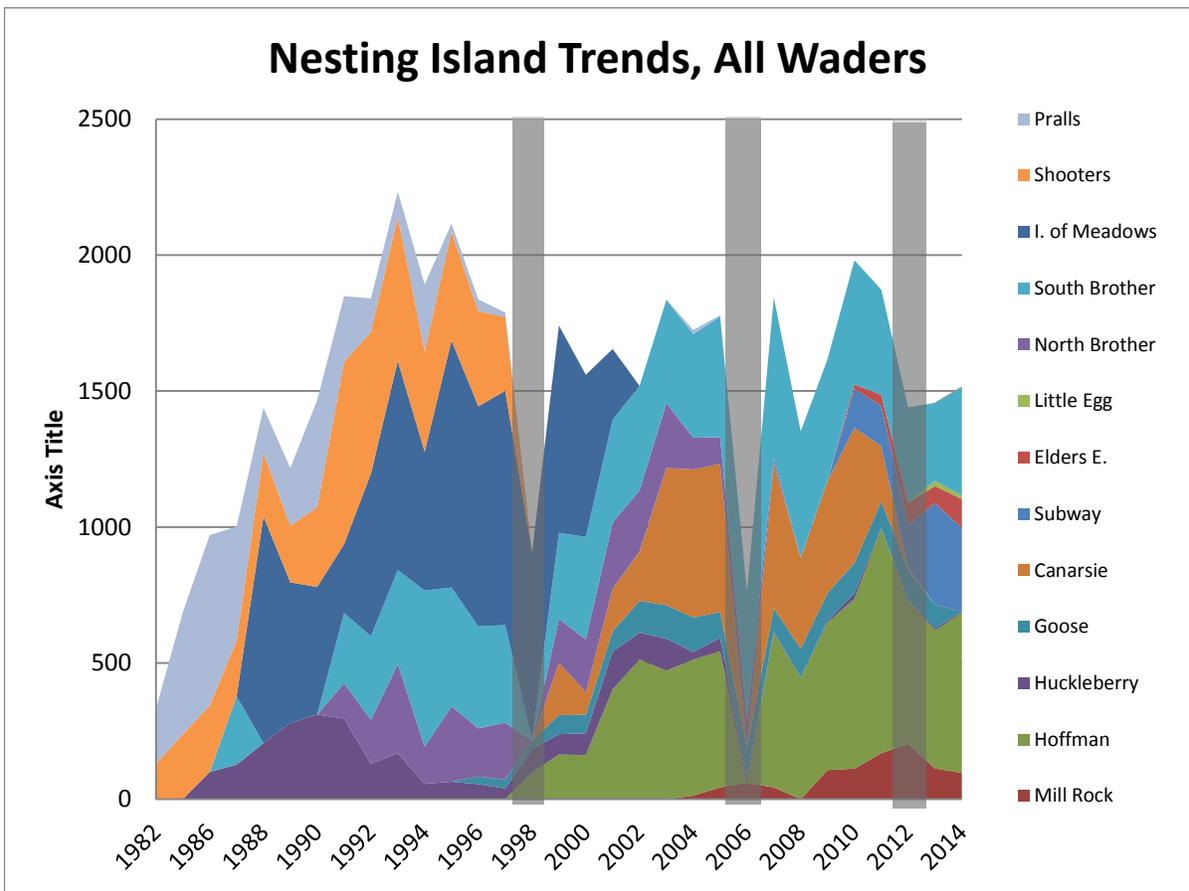
**Figure 1:** Current and former nest sites in NY/NJ Harbor for waders, cormorants, and gulls. Map modified by authors from OasisNYC.

**Table 2.** Wader, cormorant, and gull nesting activity on selected islands in NY/NJ Harbor and surrounding waterways. 2014 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), Tricolored Heron (TRHE), Double-crested Cormorant (DCCO), Herring Gull (HERG), and Great Black-backed Gull (GBBG).

	Hoffman Island	North Brother Island	South Brother Island	Canarsie Pol	Mill Rock	Goose Island	Huckle-berry Island	Elders Point East	Subway Island	Little Egg Island	Swinburne Island	U Thant Island	Red Fern	Species Totals
<b>Waders</b>														
GREG	215	0	55	0	39	0	1	33	67	0	0	0	0	<b>410</b>
CAEG	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
SNEG	85	0	52	0	1	0	0	43	57	1	0	0	0	<b>239</b>
BCNH	197	0	271	0	56	0	4	26	91	13	0	0	0	<b>658</b>
YCNH	1	0	21	0	0	0	0	0	0	0	0	0	41	<b>63</b>
LBHE	7	0	0	0	0	0	0	0	3	0	0	0	0	<b>10</b>
GLIB	83	0	0	0	0	0	0	2	89	0	0	0	0	<b>174</b>
GRHE	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
TRHE	0	0	0	0	0	0	0	2	0	0	0	0	0	<b>2</b>
GBHE	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Unidentified	1	0	0	0	0	0	0	0	0	0	0	0	0	<b>1</b>
<b>Total Active Wader Nests</b>	<b>589</b>	<b>0</b>	<b>399</b>	<b>0</b>	<b>96</b>	<b>0</b>	<b>5</b>	<b>106</b>	<b>307</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>41</b>	<b>1557</b>
<b>Cormorants</b>														
DCCO	835	0	131	0	25	0	158	179	0	0	317	34	0	<b>1679</b>
<b>Gulls</b>														
HERG Nests	88	0	2	0	29	0	0	0	0	0	104	0	0	<b>223</b>
HERG adults	0	0	6	9	0	0	0	194	382	338	0	0	0	<b>929</b>
GBBG Nests	71	0	21	0	18	0	2	0	0	0	57	0	0	<b>169</b>
GBBG Adults	0	0	36	2	0	0	0	0	59	415	0	0	0	<b>512</b>

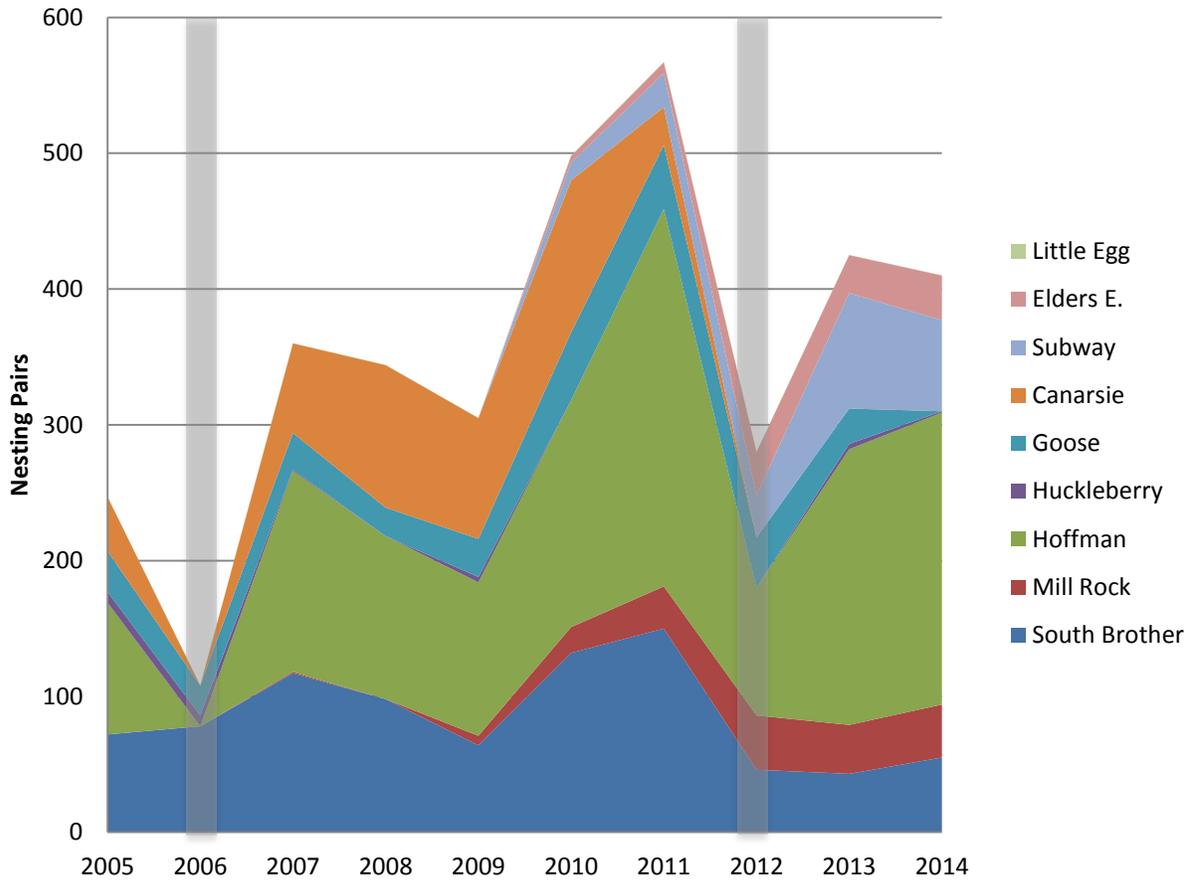


**Figure 2:** Total number of nesting pairs of wader species observed through the New York City Audubon Harbor Herons nesting surveys from 1982 to 2014. Years with substantial uncertainty in the data (survey years that did not capture one or more of the major breeding colonies) are indicated with gray bars (1998, 2006, 2012).



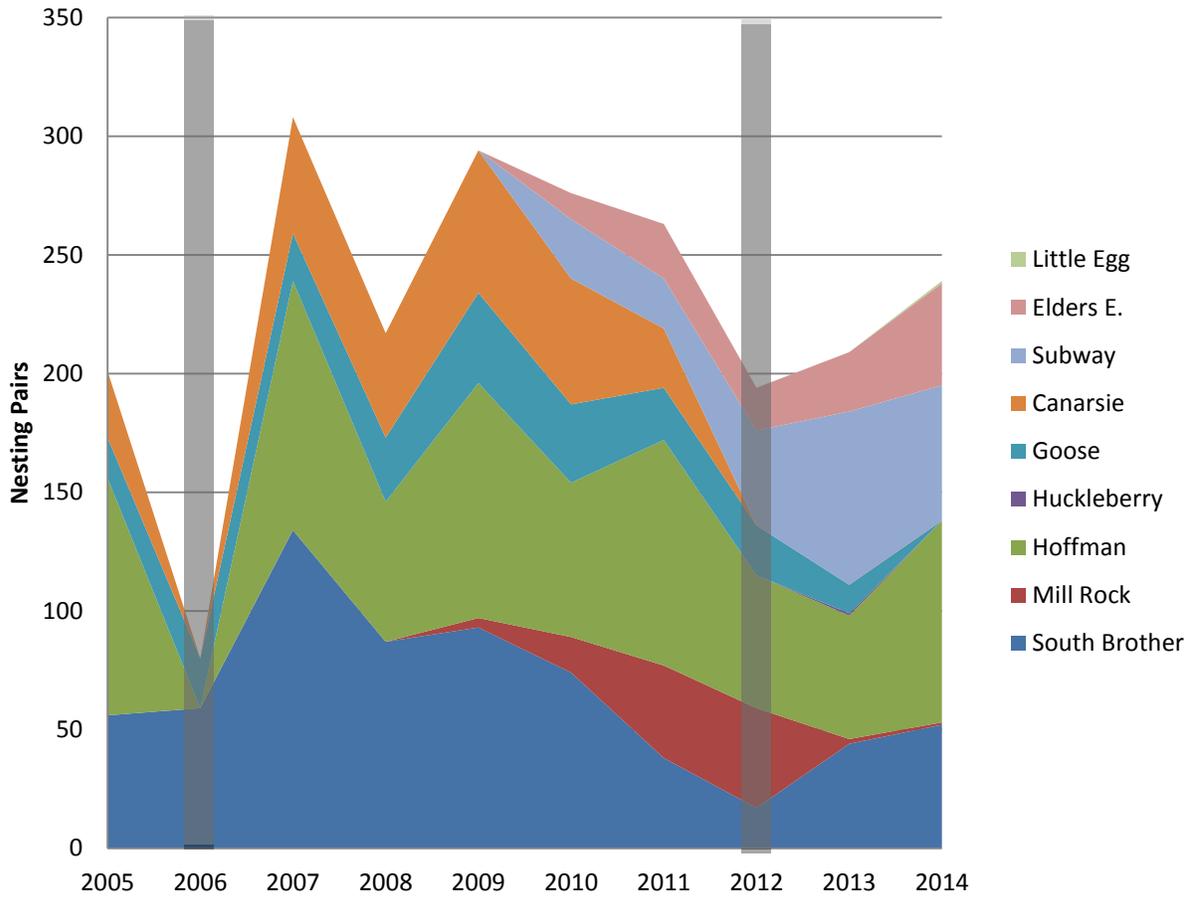
**Figure 3:** Total number of wader nesting pairs observed through the New York City Audubon Harbor Herons nesting surveys from 1982 to 2014, by nesting Island. Years with substantial uncertainty in the data (survey years that did not capture one or more of the major breeding colonies) are indicated with gray bars (1998, 2006, 2012).

## Nesting Island Trends, GREG



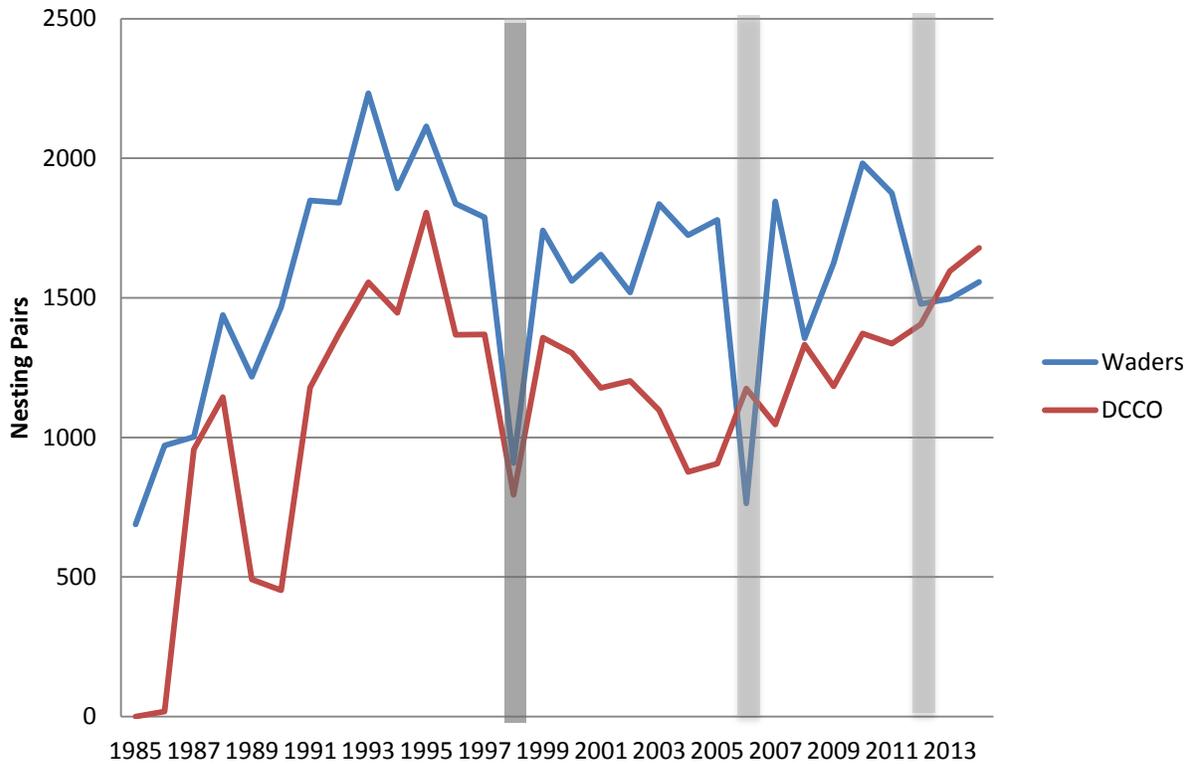
**Figure 4:** Total number of Great Egret nesting pairs observed through the New York City Audubon Harbor Herons nesting surveys from 2005 to 2014, by nesting island. Years with substantial uncertainty in the data (survey years that did not capture one or more of the major breeding colonies) are indicated with gray bars (2006, 2012).

## Nesting Island Trends, SNEG



**Figure 5:** Total number of Snowy Egret nesting pairs observed through the New York City Audubon Harbor Herons nesting surveys from 2005 to 2014, by nesting island. Years with substantial uncertainty in the data (survey years that did not capture one or more of the major breeding colonies) are indicated with gray bars (2006, 2012).

## Double-crested Cormorant vs. Wader Nesting Populations, 1985-2014



**Figure 6:** Total number of Double-crested Cormorant and wader nesting pairs observed through the New York City Audubon Harbor Herons nesting surveys from 1985 to 2014. Years with substantial uncertainty in the data (survey years that did not capture one or more of the major breeding colonies) are indicated with gray bars (1998, 2006, 2012).

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

Below is a list of other known projects conducted from 2008 to 2014 either directly or indirectly related to the Harbor Herons or the islands on which they nest. Please contact [twinston@nycaudubon.org](mailto:twinston@nycaudubon.org) to report additional research projects.

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- 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.
- Colonial waterbird foraging ecology study: stable isotope analyses of wading bird and seabird feathers from NY Harbor and Westchester County, NY. Ongoing. Contact: Elizabeth Craig, NYC Audubon/ Cornell University.
- 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. Ongoing. Contact: Melissa D.A. Alvarez, U.S. Army Corps of Engineers
- Great Egret radiotelemetry study, John Brzorad, Lenoir Rhyne College, SC.
- Habitat Health, Ptilochronology and Waterbirds: A Tale of Two Estuaries. Completed. Contact: Charles Clarkson, University of Virginia.
- Habitat restoration on North Brother Island, NYC Department of Parks and Recreation, Ongoing. Contact: Kristy King, 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/NYC Department of Sanitation. Contact: Cait Field, NYC Department of Parks and Recreation.