

**NEW YORK CITY AUDUBON'S
HARBOR HERONS PROJECT:
2005 INTERIM NESTING SURVEY**

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Abstract

New York City Audubon's Harbor Herons Project interim nesting survey of 8 islands in New York/New Jersey Harbor and surrounding waterways was conducted between 20 May and 14 July 2005. The entire NY/NJ Harbor wader population was not surveyed in 2005, and this report summarizes: (1) wader nesting activity at Shooter's Island, Prall's Island, Isle of Meadows, North Brother Island, South Brother Island, Mill Rock, Huckleberry Island, and Goose Island; and (2) Double-crested Cormorant nesting at Hoffman Island, Swinburne Island, Shooter's Island, U Thant Island, South Brother Island, and Huckleberry Island. Six species of wading birds (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Little Blue Heron, and Yellow-crowned Night-Heron) were confirmed as breeders in 6 of 8 wader colonies surveyed. South Brother Island was both the largest wader (444 nests) and largest Double-crested Cormorant (381 nests) colony of the interim survey islands. A new colony of Black-crowned Night-Herons (43 nests) was confirmed on Mill Rock. Black-crowned Night-Herons were the numerically dominant nesting species (544 nests on 6 of 8 islands). Islands in the Arthur Kill-Kill Van Kull hosted few wader nests (N = 5 BCNH nests on Prall's Island). Double-crested Cormorants nested on or near 6 islands and one channel marker (906 nests total), and showed expanded breeding activity on Hoffman Island (64 nests). Additional observations were conducted at Hoffman Island and Canarsie Pol, and thus breeding was confirmed for eight wader species (i.e. the species mentioned above plus Green Heron and Tricolored Heron) on eight islands within NY/NJ Harbor. Hoffman Island and Canarsie Pol appear to have supported similar numbers of wader nests as recorded in 2004. The next complete Harbor Herons survey is scheduled for 2007.

Introduction

New York City Audubon's Harbor Herons Project interim nesting survey of eight islands in New York/New Jersey Harbor and surrounding waterways was conducted between 20 May and 14 July 2005. This is the first interim survey of the NY/NJ Harbor islands, and the 21st consecutive year for the NYC Audubon's Harbor Herons Project. The primary objective of the 2005 survey was 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. Monitoring wading bird and cormorant nesting populations in NY/NJ Harbor provides both an estimate of the health of local wading bird populations, and a valuable indicator of the overall health of the region's natural resources.

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 2007), and in intervening years to conduct interim surveys on islands of interest. In 2005, eight islands were selected for surveys to: (1) confirm the presence or absence of wader breeding activity on recently abandoned islands in the Arthur Kill-Kill Van Kull complex; (2) confirm wader breeding on islands suspected to support new colonies; (3) assess wader breeding status on North Brother Island, where NYC Parks and Recreation conducted a habitat restoration project in February to March 2005; and (4) monitor existing Double-crested Cormorant populations, including recent expansions onto islands previously populated by wading birds alone.

Islands surveyed (Figure 1) in 2005 included Shooter's and Prall's islands, and Isle of Meadows in the Arthur Kill-Kill Van Kull complex; North and South Brother Islands, and Mill Rock in the East River area; and Goose Island in the Hutchinson River; and Huckleberry Island in Long Island Sound (Westchester County). In addition, Double-crested Cormorant counts were conducted either directly or indirectly on all known islands and structures that support nests in NY/NJ Harbor, including Shooter's Island, Hoffman and Swinburne Islands, U Thant Island, South Brother Island, and Huckleberry Island. Most islands were surveyed by a research team consisting of survey leader Andrew Bernick, volunteers from NYC Audubon and other organizations, and staff from New York City Department of Parks and Recreation. Surveys of Huckleberry and Goose islands were lead by David Künstler (NYC Department of Parks and Recreation, Van Cortlandt & Pelham Bay Parks Administrators' Office), and information regarding these islands contained here are based on his reports (Künstler 2005, 2005b). Information on the status of Canarsie Pol (Jamaica Bay) is also included.

As the entire wader population was not surveyed in 2005, this report summarizes breeding activity on specific islands only. Population trends for individual species are not presented in this report, although external research provided information on species and colony status on unsurveyed islands, and those results are presented.

Methods

The 2005 survey followed methods used in the Harbor Herons Project by former survey leaders Dr. Katherine Parsons (1986-1995) and Dr. Paul Kerlinger (1996-2004). All counts were conducted between 0900 and 1840h, under clear to cloudy conditions without rainfall, high winds (>5 knots), or temperatures above 85°F. Although some of the counts were conducted as late as July due to logistical difficulties, the optimal time for counts is prior to or just after hatching (mid May to early June).

For wading birds, one or two teams of researchers quickly and systematically searched for nests on each island, initially focusing effort on areas occupied by nesting birds in previous years. A team included two counters (i.e. one person using a telescopic mirror pole (Figure 2) to examine contents of nests up to ~5 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 resampling the same nests. A nest was considered 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 1 meter of a nest. Whenever possible, nests were identified to species by the young, eggs, or nest structure. Nests beyond the reach of the mirror pole were examined with binoculars. If nest contents could still not be confirmed, but other evidence suggested recent activity (e.g. feces, new nest construction), nests were noted as active with contents 'unknown'. Additionally, old or unused nests were noted in the count as 'empty', but not included in the final tally of active nests. The number of eggs and young for each nest were recorded when possible, unless older nestling activity (e.g. leaping from nest, climbing away from nest area) precluded safe observation of nest contents. In this case, nests were only identified to species. Finally, wader nesting habitat (e.g. tree, shrub, or vine species) was noted whenever possible.

For Double-crested Cormorants, surveys were either conducted by direct observation as detailed above (Hoffman Island, South Brother Island, Huckleberry Island) or by boat with binoculars when landing was not possible (Shooter's Island, U Thant, Swinburne Island, channel markers). When possible, cormorant nests occupying trees above or with wader species were noted separately. As in previous years, nest contents were not described in detail (e.g. number of eggs/young), although this might be advantageous for future surveys.

In 2005, Great Black-backed and Herring gulls nest numbers were not regularly surveyed. When adults were counted in the vicinity of certain colonies, a nest was assumed present for each adult seen, as one-half of adults are assumed to be foraging away from the nesting colony during daytime (see Kerlinger 2004). All other species observed (e.g. waterfowl, shorebirds, rails, etc.) were noted on an opportunistic basis and should only be considered rough estimates.

Transportation

One of the more difficult logistical aspects of NYC Audubon's nesting surveys is acquiring safe transport for researchers and equipment to islands around NY/NJ Harbor. As in recent years, boat access to islands and logistical support in the field was provided by Captains Art Roesler and Jerry Woerner of ConocoPhillips-Bayway Refinery's Oil Spill Response Team (for surveys in the Arthur Kill and Kill Van Kull), and by Alexander Summers and Nathaniel McVay of the New York City Department of Parks and Recreation-Natural Resources Group (for all other surveys). David Künstler (NYCDPR) provided his own canoe transportation to conduct the Goose Island surveys. Dr. Scott Newman and Dr. Susan Elbin of Wildlife Trust and Jay McKinney of the National Park Service provided assistance and boat transportation for winter nest counts and other survey information relating to the 2005 breeding season. We sincerely thank ConocoPhillips-Bayway Refinery, NYC Department of Parks and Recreation-Natural Resources Group, and Wildlife Trust for offering their time, fuel, vessels, and able captains to participate in this project.

Results

A total of 736 nests of six species of wading birds (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Little Blue Heron, and Yellow-crowned Night-Heron) were confirmed as breeders on 6 of 8 islands surveyed (Table 1 & 3). No nesting activity was noted on Shooter's Island in the Kill Van Kull or Isle of Meadows in the Arthur Kill, while the sparse nesting of Black-crowned Night-Herons on Prall's Island showed little sign of productivity. Declines in wader breeding activity from the 2004 breeding season were noted for Goose Island and North Brother Island, while Black-crowned Night Heron nesting on Huckleberry Island increased, and a new Black-crowned Night-Heron colony was confirmed at Mill Rock (43 nests).

Although they were not part of the interim survey, the sizeable wader colonies on Canarsie Pol and Hoffman Island (over 500 nests on each island) appeared to have similar nesting activity as over the past three years. During wader nestling health research conducted by Wildlife Trust, a single Green Heron nest was located on Hoffman Island and 2 Tricolored Heron nests (with young) were observed on Canarsie Pol.

Cattle Egret adults were observed in Staten Island and Jamaica Bay both prior to and following the breeding season, but they were rarely encountered within nesting colonies (1 adult each at South Brother Island and Canarsie Pol), and appear to have largely abandoned breeding attempts in the NY/NJ Harbor area.

A total of 906 Double-crested Cormorant nests were observed on 6 islands (Hoffman, Swinburne, Shooters, South Brother, Huckleberry, and U Thant Islands) and one channel marker (Marker 18, Kill Van Kull). This represents a slight increase (3.3%) over 2004 levels (Table 2). A total of 64 Double-crested Cormorant nests were located on the southern portion of Hoffman Island, a 47% increase over the previous year. Conversely, nesting has declined on nearby Swinburne Island to 87 nests (a 20% decrease over the previous year), indicating a potential shift of breeding activity from Swinburne to Hoffman Island.

Island accounts are as follows:

Long Island Sound - New Rochelle, Westchester County

Huckleberry Island: David Künstler (NYCDPR) led the survey of Huckleberry Island with Alexander Summers and Nathaniel McVay on 27 May 2005 from 0815-1200 hrs. The island was accessed by the NYCDPR Vessel *Parker*. A total of 50 wader nests of two species (Black-crowned Night-Herons and Great Egrets) were located on the east side of the island. This represents a 74% increase over the number of Black-crowned Night-Heron nests located in 2004. Following a three year decline, no Snowy Egret nests were observed in 2005. Double-crested Cormorant nesting was equivalent to 2004 levels, though still approximately 100 fewer nests than in 2001. As in previous years, at least two pairs of nesting American Oystercatchers were present, along with Herring (32 adults) and Greater Black-backed (38 adults) gulls.

Both wader and cormorant nests were built relatively high (>4 meters) above the ground, and predominantly in Norway Maple and Black Cherry, with some nests located in Sassafras, Black Locust, and other tree species. More information on nesting vegetation on Huckleberry Island may be found in Künstler 2005.

Kerlinger (2004) suggested that a major factor in the nesting decline exhibited on Huckleberry Island in recent years was continued human presence on the island (i.e. construction, picnicking, etc). Currently, it is one of two privately owned islands in NYC where wader nesting occurs. Potential solutions include seeking an easement from the owners (the Huckleberry Indians, who are interested in protecting the nesting birds there) for areas where wading birds nest, or investigating its suitability as a priority acquisition by a local, state, or federal agency or private conservation group interested in protecting NYC's wading bird population.

East River, Hutchinson River, and Long Island Sound

Goose Island: David Künstler (NYCDPR) led the survey of Goose Island with two assistants (Yigal Gelb and Chris Nagy) on 27 May 2005 from 1530-1840h. The island was accessed by canoe.

A total of 95 nests of 5 species of waders were identified, which represents a ~27% decline from activity in 2004, the first significant decline since the colony was discovered in 1996. Nests included the same four species as in previous years (Black-crowned Night-Heron, Yellow-crowned Night-Heron, Great Egret, and Snowy Egret), and the first Little Blue Heron nest since 2000. Black-crowned Night-Herons were the most numerous (44 nests), though they have been declining slightly since 2003. While Great Egret nesting has expanded to their highest level since 1996 (30 nests), Snowy Egrets declined as nesters by ~60% from the previous year (from 43 to 17 nests), the lowest level since 2001. Other species present included a single Great Black-backed Gull nest, both Mallard (1) and Canada Goose (several) nests, Least Sandpipers (3 individuals), and Laughing Gulls (6 adults). More information on wader nest productivity on Goose Island may be found in Künstler 2005.

Before the decline described in the current survey, the nesting wader population on Goose Island increased from 1996-2003, with a high of 135 total nests observed in 2003. Kerlinger (2004) remarked that the island seemed to have reached its capacity, due to its small size (~1 acre), limited vegetation, and high nest density.

South Brother Island: The survey of South Brother Island was conducted on 2 June 2005 from 1525-1640h, by the author and four assistants (Luke Powell, Yigal Gelb, David Künstler, and Chris Nagy). The island was accessed via the NYCDPR Vessel *Parker* and canoe. Due to the late hour, counts of nests were conducted without close examination of nest contents.

Certain areas of the island were difficult to access due to considerable amounts of Oriental Bittersweet and other vines. An effort to either adjust the sampling protocol or apply a correction factor to the current counts should be made to realize a more robust population estimate. Nevertheless, a total of 444 nests of five wader species (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, and Yellow-crowned Night-Heron; see Table 3 for nest numbers) were located throughout the colony, while Double-crested Cormorants (381 nests) primarily occupied, but were not restricted to, the center of the colony. In general, most wading bird nests contained two to three week old nestlings, thus suggesting an earlier hatch date than those located at North Brother. As surveys of South Brother were 1) based on previous estimates for the past two years and 2) due to its relative difficulty to survey by foot, inferences on recent trends are not appropriate. It is possible that the 2005 survey is still an underestimate of the actual number of wading bird nests.

Nesting habitat for cormorants on South Brother included a stand of locust trees (in the center of the colony, where the majority of nests are located), as well as White Mulberry, Black Cherry, and other tree species covered with Oriental Bittersweet also preferred by wading birds.

Of the 381 cormorant nests located, 292 nests were located in trees or other vegetation occupied by other cormorants alone, while 89 nests were located in the same tree as, and generally above, Black-crowned Night-Heron or Glossy Ibis nests. Due to the prodigious amounts of feces (Figures 3 & 4) that are produced by cormorants, these wader nests may be displaced by cormorants in the future. A research program focusing on cormorant-wader nesting interactions would be ideal. For the near future, it would be advantageous to mark shared cormorant-wader nesting trees and monitor any change in nesting that occurs in subsequent years.

Additional species include an American Oystercatcher (1 adult), which was spotted on shore by C. Hofer. In both 2002 and 2003, the author located one American Oystercatcher nest (with 1 egg in 2002, and two eggs in 2003) above the wrack line on the western shore of the island.

Currently, South Brother Island is owned by a private entity (Hampton Scows). Although there are no known plans to develop or otherwise alter the island, the future of this island as an important nesting area will not be secure until it is purchased by a public or private conservation organization. We strongly suggest that South Brother Island, which is the third largest wader and cormorant colony in NY/NJ Harbor, be placed on a priority acquisition list in

order to safeguard its future as a key Harbor Herons colony. Künstler (personal communication) suggests that presence of more than 100 individuals of Late-flowering Thoroughwort (*Eupatorium serotinum*), a NY state-endangered plant species, may be a good selling point, as is South Brother Island's marine rocky intertidal shore habitat, which is ranked S1S2 by the NYS-DEC's NY Natural Heritage Program.

North Brother Island: The survey of North Brother Island was conducted on 2 June 2005 from 1215-1430h, by the author and seven assistants (Luke Powell, Yigal Gelb, David Künstler, Chris Nagy, Charles Hofer, Alexander Summers, and Nathaniel McVay). The island was accessed via the NYCDPR Vessel *Parker*.

A total of 99 active Black-crowned Night-Heron nests were located on the island, and an additional 10 empty, unused nests were located. There was a 15% decrease in Black-crowned Night-Heron nesting on North Brother from 2004, though increases for this species were observed in two nearby colonies (Mill Rock and South Brother Island). At the time of this survey, most nests contained three to four eggs, and a smaller proportion of nests contained young ranging from one to three weeks old (Table 4). One Yellow-crowned Night-Heron adult was observed on the island, though nesting was not confirmed. Additional species observed included Gadwall (1 nest), Black Duck (1 nest), American Woodcock (1 adult), Fish Crows (6 individuals), and Great Horned Owl (1 adult and molted juvenile feathers located near the center of the island).

Wader breeding activity occurred mainly on the southwestern and southern edges of the island, in areas characterized by either: 1) Oriental Bittersweet and other vines tangled around collapsing structures, chain-link fences, and trees; 2) underneath Black Cherry, White Mulberry, and other tree species completely covered by mats of Oriental Bittersweet, and 3) Black Cherry, Gray Birch, and White Mulberry unencumbered by vines. A major habitat restoration project was undertaken by NYC Department of Parks and Recreation in February and March 2005, with financial support from Audubon NY (via a National Fish and Wildlife Foundation grant), and assistance from NYC Audubon and other organizations. Approximately one acre of Norway Maples was cleared within 10-30 meters of the area of the main colony, and native vegetation was planted in this vicinity. By mid-July, this clearing was almost entirely covered with Pokeweed and nightshades, although most of the plantings were still in good condition (Mike Feller, personal communication).

A thorough winter nest count was conducted by the author and Scott Newman (Wildlife Trust) in October 2004 to search for additional evidence of nests in the areas of North Brother densely covered with Oriental Bittersweet during the summer months. A total of 123 previously used nests were located. Further winter nest surveys should be considered for all islands with areas of dense cover which are difficult to survey (e.g. South Brother Island, Canarsie Pol) as a method to calculate a correction factor for the number of nests missed in spring surveys.

In an interesting departure from the current protocol, Alexander Summers and Nathaniel McVay both wore full-body camouflage suits as they assisted in the nesting surveys, and suggested a qualitative difference (e.g. shorter flush distance, adults returning to nests while they

were within 1 meter) in the behavior of nestlings and adults while they passed through the colony.

Mill Rock: Mill Rock, located near the confluence of the East and Harlem rivers, was surveyed on 14 July 2005 from 1030-1115h by the author, Mike Feller (NYCDPR), and Valerie Druguet. Access to the island was provided via NYCDPR Vessel *Spartina*. This represents the first time that Mill Rock has been directly surveyed in at least five years.

A total of 43 Black-crowned Night-Heron nests were located in the northern portion of Mill Rock, mainly in mulberry trees, with a few nests in Black Cherry and one in a sumac. The narrow southern spur, which also contained numerous mulberry trees, did not support any nests. At this late point in the season, most nests contained either four to five week old nestlings, and numerous recently fledged birds were in the vicinity of the nests (Figure 4). Four nests contained eggs, and those in one nest were still warm from recent incubation (Table 4).

Evidence of Black-crowned Night-Heron nesting was first observed by the author in June and July 2003, during the pilot year of the NYC Audubon Shore Monitoring Program. On several occasions, both young nestlings and adults were observed in trees on the eastern portion of the island. Subsequent observations of Black-crowned Night-Heron nestlings in treetops were also made in 2004 by Gabriel Willow during NYC Audubon Eco-tours. In October 2004, the author and Scott Newman (Wildlife Trust) conducted a thorough winter nest search on Mill Rock, and located 13 wading bird nests from the previous nesting season, which suggests that up to 30 additional nests were first built on Mill Rock in 2005.

On the northern end of the island, a brick barbeque pit and several park benches were present (Figure 5), although the site did not look recently occupied. Before the 2006 breeding season, wading bird nesting signs should be posted on Mill Rock to alert potential trespassers of the island's status as a breeding colony.

U Thant Island: This island was surveyed by the author from Roosevelt Island on 21 May 2005 under clear conditions. A total of 15 Double-crested Cormorant nests were observed on the island, although no gull nests could be confirmed.

Staten Island – Arthur Kill and Kill Van Kull

Shooter's Island: – The island was surveyed on 20 May 2005 by the author and four volunteers (Catherine Barron, Brian Hart, Richard Plunkett, and Linda Vanderveer) from 1300 to 1430h. Access to the island was provided via ConocoPhillips-Bayway Refinery Oil Spill Response Vessel *Baywave II*. No wading birds were observed in the interior of the island, or around the island perimeter when surveyed by boat.

The Double-crested Cormorant colony situated on dry docks and other wreckage west of Shooter's Island yielded 34 active nests in 2004, and 2 other nests were observed on one nearby channel marker (Marker 18, Kill Van Kull). The cormorant nests on Shooter's Island and the nearby channel marker represent about 38% of the nests present on the dry docks alone in the mid-1990s.

Three Herring Gull nests were observed on the dry docks to the west of Shooter's, and an Osprey nest on pilings at the east end of the island was still present, and two adults were observed on the nest engaging in nest maintenance and incubation. This is the fourth year that an Osprey nest has been present on the same piling east of Shooter's Island. There was no sign of any recent activity at the former human encampment near the south side of Shooter's Island.

Prall's Island. This island was surveyed on 20 May 2005 by the author and four volunteers (Catherine Barron, Brian Hart, Richard Plunkett, and Linda Vanderveer) from 0900 to 1030h. Access to the island was provided via ConocoPhillips-Bayway Refinery Oil Spill Response Vessel *Baywave II*. Two teams searched the entire island for nests in both former nesting areas and areas where adults were observed roosting during the 2004 survey (i.e. *Phragmites* stands on the southern tip)

Although five Black-crowned Night-Heron nests in the northwest portion of the island that were occupied by adults were located, there was no sign of successful reproduction (e.g. eggs or young), either during this survey, or during late season observations conducted in August 2005 by Alexander Summers and Nathaniel McVay. A total of 34 empty, inactive nests were also located. All of these nests were located approximately 5-6 meters up in Gray Birches in the northern half of the island. Due to nesting attempts in both 2004 (~15 active BCNH nests were located, although none were successful) and 2005, it would be advisable to closely monitor Prall's Island during future interim or complete nest surveys.

A total of ten adult and two juvenile American Woodcock were observed in disparate areas of the island. Interestingly, recent deer trails and scat were plentiful around Prall's, although no deer were observed at the time of the survey.

Isle of Meadows: This island was surveyed on 20 May 2005 by the author and four volunteers (Catherine Barron, Brian Hart, Richard Plunkett, and Linda Vanderveer) from 1100 to 1215h. Access to the island was provided via ConocoPhillips-Bayway Refinery Oil Spill Response Vessel *Baywave II*. The traditional colony areas at the island interior were searched, as well as potential nesting areas on the northern section of the island formerly utilized by nesting gulls. No wading birds, cormorants, or gulls were observed, nor were there any nests that looked recently active.

Six American Woodcock individuals (age unknown) were observed at two locations in the center of the island. Additionally, large owl pellets with rodent remains and whitewash was discovered at three locations near the edge of the formerly active part of the colony. Through the New York State Breeding Bird Atlas surveys (2000-2004), both Barn and Great Horned owls have nested in the vicinity of the island, including a Barn Owl nest located within the Fresh Kills Landfill under a bridge that spans Richmond Creek.

Staten Island-Lower New York Harbor

Hoffman Island: Although interim wading bird surveys were not scheduled for Hoffman Island, on 15 June 2005 the author assisted a team from Wildlife Trust in their ongoing project on

wading bird nestling health, and was able to conduct a general census and confirm nesting for several species of wading birds. Additionally, Dr. D.V. 'Chip' Weseloh from the Canadian Wildlife Service, Dr. Susan Elbin from Wildlife Trust, and David Adams of NYS-Department of Environmental Conservation collaborated on a survey of Double-crested Cormorant nests on the island.

Six species of waders (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Little Blue Heron, and Green Heron) were confirmed as nesters, and based on an investigation of the island, the numbers of nests for each species seemed similar to 2004 (i.e. approximately 500 nests total). No Cattle Egret nests or adults were observed.

The number of Double-crested Cormorants on this island increased by 40% over 2004 levels. A total of 64 nests were located in locust trees on the southwest edge of the island (Figure 7). Dr. Chip Weseloh shared his knowledge on the deleterious effects of cormorants on nesting wading bird colonies from his experiences in the Great Lakes region, and demonstrated alternate methods for surveying cormorant and wading bird colonies than previously used in the NYC Audubon nesting surveys. Dr. Weseloh will be a valuable consultant in designing a more robust survey protocol for future surveys.

Swinburne Island: On 21 July 2005, a Double-crested Cormorant count was conducted at Swinburne Island by the author and Dr. Susan Elbin from 1300 to 1345 hrs. Observations were made from Wildlife Trust's 15-foot Zodiac at a distance of approximately 150 meters from the colony. A total of 87 cormorant nests were observed on the island, which represented a decline of 20% from the previous year. There appeared to be fewer nests on the roof line of the brick structures on the eastern edge of the colony. Due to the late date of the survey, however, some nests may have been partially obscured by the large numbers of roosting cormorants and vegetation on some of the nesting trees in the center of the island. In the future, nest counts should be made in May through June to allow for optimal nest visibility.

Canarsie Pol: On 12 July 2005, the author accompanied Dr. Susan Elbin, Stephanie Schmidt (Manomet Bird Observatory), and two assistants to Canarsie Pol to assist on a wading bird nestling health study. Transportation to the island was provided by a NPS boat through Kim Tripp (NPS-Jamaica Bay Institute).

Eight species of waders (Black-crowned Night-Heron, Great Egret, Snowy Egret, Glossy Ibis, Little Blue Heron, Tricolored Heron, Yellow-crowned Night-Heron, and Cattle Egret) were confirmed as nesters, and based on a brief investigation of the island, the numbers of nests for each species seemed similar to 2004 (i.e. approximately 550 nests total). Other potential or confirmed nesting species observed on Canarsie Pol included Sora (1 juvenile), American Oystercatcher (44 adults), Willet (1 nest), and Marsh Wren (2 nests).

Canarsie Pol is both the largest (in area and number of nests) and most difficult colony to survey of all islands in NY/NJ Harbor. The densest areas of the colony are located in an essentially impenetrable barrier of Oriental Bittersweet, Blackberry, Cat Briar, Multiflora Rose, *Phragmites*, Poison Ivy, and other species. Nests, particularly of darker waders such as Glossy Ibis or Black-crowned Night-Herons, are often built underneath mats of vines or thorny

vegetation and as close to 10 centimeters from the ground. Under current conditions, it is certain that both ground and aerial surveys would have large errors in any estimate provided. Before the next complete survey in 2007, both a reasonable protocol for surveying and a correction factor should be designed for this island.

Conclusions and Recommendations

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

The interim survey was an integral part of the 2005 Harbor Herons Project, and continued monitoring of wading bird populations through nesting surveys is a necessary method to assemble definitive data on species status, population trends, and a supporting measure of the health and persistence of the system. However, several actions should be taken to improve the Harbor Herons Project, and to protect the region's wading birds and nesting colonies. Recommendations are as follows:

- Before the next complete survey in 2007, a more robust survey protocol must be designed to address the changing habitat conditions on certain colonies (e.g. Canarsie Pol, South Brother Island).
- Triennial surveys should be expanded to include: (1) a measure of productivity; and (2) habitat monitoring and assessment. Long-term funding to support the expansion of triennial nesting surveys is critical, and should be sought from both private and public sources.
- Establish non-breeding season nest counts (to be conducted between October and February) for islands that are difficult to survey, and use this information to identify areas where the colonies are concentrated, and to derive an error estimate or correction factor for breeding season surveys.
- For islands that are currently privately owned (i.e. South Brother Island, Huckleberry Island), either easements should be sought from the owners, or the islands should be placed on priority acquisition lists by public or private conservation organizations, as an investment in the future of the Harbor Herons.
- Design a photographic guide of nests, eggs, and young to aid volunteers in identification during nesting surveys. A reference guide to identify nest trees, shrubs, and vines should also be developed, particularly in association with Mike Feller and David

Künstler, both of NYCDPR. Guides should be available in PDF format for all volunteers.

- Open/continue dialogue with all agencies responsible for colonial waterbird surveys in New York, New Jersey, and Connecticut, in order to establish a working regional perspective on colonial wading bird and cormorant populations.
- Continue to monitor nesting activity annually at the Arthur Kill-Kill Van Kull complex islands.
- Analyze and publish trend data from the 1986-2005 NYC Audubon Harbor Heron Surveys. These data were entered into a database in Summer 2005 by Ariana Harari and Susan Elbin (Wildlife Trust).
- Encourage the development of wading bird and cormorant research projects at NY/NJ universities, at high school, undergraduate, and graduate levels.
- Establish a list of research conducted each season on the Harbor Herons or their nesting colonies (see Appendix A)
- Examine gene flow between or among metropolitan NY/NJ area colonies with southern New Jersey, Long Island, and Connecticut.
- Complete and distribute the Harbor Herons Conservation Plan for external review by 2006 (designed by the NY/NJ HEP Harbor Herons Subcommittee)

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TABLES, FIGURES, AND APPENDICES

Table 1. Survey schedule for New York City Audubon’s Interim Nest Survey, May-July 2005.

Island Surveyed	Date	Number of Observers	Ownership
<u>Long Island Sound</u>			
Goose Island	27 May	3	NYC Parks & Recreation
Huckleberry Island	27 May	3	Huckleberry Indians
<u>East River</u>			
North Brother	2 June	8	NYC Parks & Recreation
South Brother	2 June	5	Hampton Scows
Mill Rock	14 July	2	NYC Parks & Recreation
U Thant Island	21 May	1	NYC Parks & Recreation
<u>Arthur Kill-Kill van Kull</u>			
Shooter’s Island	20 May	5	NYC Parks & Recreation
Pralls Island	20 May	5	NYC Parks & Recreation
Isle of Meadows	20 May	5	NYC Parks & Recreation
<u>Lower New York Harbor</u>			
Hoffman Island*	15 June	4	National Park Service
Swinburne Island*	21 July	2	National Park Service
<u>Jamaica Bay</u>			
Canarsie Pol*	12 July	5	National Park Service

* Hoffman Island, Swinburne Island, and Canarsie Pol were not surveyed for wading birds as part of the interim survey. Double-crested Cormorant nests were surveyed following the protocols mentioned in the Methods section of this report.

Table 2. Summary of Double-crested Cormorant nesting in the New York/New Jersey Harbor, May to June 2002-2005 [†]

<u>Island</u>	<u>Year – Number of Cormorant Nests</u>			
	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Shooter’s Island	75	48*	45*	36*
Huckleberry Island	289	247	324	323
South Brother Island	600	625**	350	381
U Thant Island	11	11**	16	15
Hoffman Island	18	~25	34	64
Swinburne Island	210+	142	108	87
Total	1,203	1,098	877	906

[†] Data sources include the 2005 interim survey and prior nesting surveys by Paul Kerlinger (2002-2004) and David Künstler (Huckleberry Island, 2002-2005).

*Includes nests on one to three channel markers in the Arthur Kill and Kill Van Kull between the Bayonne Bridge and Outerbridge Crossing.

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

Table 3. Interim Survey Data, May to July 2005.

2005 Interim Survey Islands									
	Shooters	Pralls	Isle of Meadows	N Brother	S Brother	Mill Rock	Huckleberry*	Goose*	Nest total by Species
Black-crowned Night-Heron	0	5	0	99	311	43	42	44	544
Great Egret	0	0	0	0	72	0	8	30	110
Snowy Egret	0	0	0	0	56	0	0	17	73
Glossy Ibis	0	0	0	0	3	0	0	0	3
Yellow-crowned Night-Heron	0	0	0	0	1	0	0	3	4
Little Blue Heron	0	0	0	0	0	0	0	1	1
Tricolored Heron	0	0	0	0	0	0	0	0	0
Green Heron	0	0	0	0	0	0	0	0	0
Cattle Egret	0	0	0	0	1	0	0	0	1
Nest Total by Island	0	5	0	99	444	43	50	95	736

* Surveys of Huckleberry and Goose islands lead by David Künstler (NYCDPR, Van Cortlandt & Pelham Bay Parks Administrators' Office). All others lead by Andrew Bernick.

Table 4. Nest contents for Black-crowned Night-Herons on Mill Rock and North Brother Island, May-July 2005[†].

Nest contents	Mill Rock (7/14/05)	North Brother Island (6/2/05)
1 Egg	0 nests	9 nests
2 Eggs	1 nest	19 nests
3 Eggs	3 nests	29 nests
4 Eggs	0 nests	6 nests
1 Young	5 nests	1 nest
2 Young	11 nests	4 nests
3 Young	2 nests	9 nests
1 Egg + 1 Young	0 nests	5 nests
1 Egg + 2 Young	0 nests	5 nests
2 Eggs + 1 Young	0 nests	1 nest
Unknown *	1 nest	11 nests
Empty **	2 nests	10 nests

[†] For information on wading bird nest contents on Huckleberry and Goose islands, see Künstler 2005, 2005b)

* Unknown nests = those with nest contents out of view, or with some evidence of recent use (see Methods)

** Empty nests = inactive nests



Figure 1: Location of wading bird and cormorant breeding colonies in NY/NJ Harbor and surrounding waterways, 2005. See text for details of colony status and species composition. Map modified from OasisNYC.



Figure 2: Using a mirror pole to survey a Black-crowned Night-Heron nest in the tree canopy on South Brother Island on 2 June 2005. Photo: © Andrew Bernick.



Figure 3: Eastern view of vegetation below Double-crested Cormorant nests in the center of South Brother Island, 2 June 2005. The denser vegetation in the background is the type in which wading birds commonly nest on the island. Photo: © Andrew Bernick.



Figure 4: Northern view of recent Double-crested Cormorant nests on the northern side of South Brother Island, 2 June 2005. Note whitewash emanating from cormorant nests in the center and right of the image. Photo: © Andrew Bernick.



Figure 5: Black-crowned Night-Heron nestling on Mill Rock, 14 July 2005. Photo: © Valerie Druguet.



Figure 6: Evidence of past human activity on Mill Rock, 14 July 2005. Photo: © Valerie Druguet.



Figure 7: Vegetation below Double-crested Cormorant nests on the southwestern tip of Hoffman Island, 15 June 2005. Photo: © Andrew Bernick.

Appendix A

Current Research on Wading Birds or Cormorants, NY/NJ Harbor

Below is a list of other known projects conducted in 2005 either directly or indirectly related to the Harbor Herons or the islands on which they nest. This is likely an incomplete list, though we would like to inform the readers of this report with any Harbor Herons-related research conducted in the metropolitan NY/NJ area. Please contact survey leader Andrew Bernick (bernick@mail.csi.cuny.edu) to inform him of your recent or ongoing research projects.

Habitat Restoration on North Brother Island, NYC Department of Parks and Recreation, February-March 2005. Contact: Tim Wenskus, NYC Department of Parks and Recreation.

Habitat restoration on Goose Island, NYC Department of Parks & Recreation, Oct. 2004-. Contact: David Künstler, NYC Department of Parks & Recreation, Van Cortlandt & Pelham Bay Parks Administrators' Office.

Harbor Herons Monitoring Program, NYC Audubon, May-August 2005. Contact: Chris Nagy/Yigal Gelb, NYC Audubon.

Invertebrate sampling on North and South Brother Island, Columbia University-CERC/Wildlife Trust, 21 June 2005. Contact: Dr. James Danoff-Burg, Columbia University.

Nuisance mammal surveys in Jamaica Bay (including Canarsie Pol and other islands), Hofstra University/National Park Service, Summer 2005. Contact: Dr. Russell Burke, Hofstra University.

Preliminary site assessment of historic structures on North Brother Island, NYC Department of Parks and Recreation/University of Pennsylvania-Historic Preservation Program, 25 May 2005. Contact: Deputy Commissioner Amy Freitag, NYC Department of Parks and Recreation.

Radio-tracking adult Black-crowned Night-Herons in Staten Island and Jamaica Bay, April to October 2005. Contact: Andrew Bernick, CUNY-Graduate Center.

Wader Nestling Health Study, New York Bioscape Initiative/Wildlife Trust, June-July 2005. Contact: Dr. Scott Newman, Wildlife Trust.