ASSESSING THE STATUS AND DISTRIBUTION OF NESTING HERONS IN URBAN AREAS OF LOWER TIDEWATER, VIRGINIA (2018 BREEDING SEASON)

THE CENTER FOR CONSERVATION BIOLOGY

COLLEGE OF WILLIAM AND MARY

VIRGINIA COMMONWEALTH UNIVERSITY

Assessing the status and distribution of nesting herons in urban areas of lower Tidewater, Virginia (2018 breeding season)

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Project Partners:

Virginia Coastal Zone Management Program
The Virginia Department of Game and Inland Fisheries
United States Fish and Wildlife Service
Virginia Department of Transportation
The Nature Conservancy
Center for Conservation Biology

Front Cover: Male yellow-crowned night heron collecting sticks for a nest in Norfolk, Virginia. Photo by Bryan Watts.

Our Mission: The Center for Conservation Biology is an organization dedicated to discovering innovative solutions to environmental problems that are both scientifically sound and practical within today's social context. Our philosophy has been to use a general systems approach to locate critical information needs and to plot a deliberate course of action to reach what we believe are essential information endpoints.

Table of Contents

Contents

EXECUTIVE SUMMARY

Twenty-five species of colonial waterbirds nest in Virginia including herons, egrets, ibises, gulls, terns, skimmers, cormorants, and pelicans. A coalition of agencies, organizations and individuals has systematically surveyed waterbird nesting colonies throughout the Coastal Plain periodically since 1993. The objectives of these surveys have been to develop timely data resources that may be used for environmental review and to assess long-term trends in breeding populations. The 2018 survey represents a continuation of the series. The objective of the sub-project reported here was to survey heronries throughout urban areas of lower Tidewater including the cities of Newport News, Hampton, Norfolk, Virginia Beach, and Portsmouth.

We surveyed lower Tidewater for heron colonies between 10 April and 3 July, 2018 by systematically driving or walking through neighborhoods and other urban areas. We mapped and surveyed 90 heronries that supported great egrets, yellow-crowned night herons and green herons. Colony size varied from 2 to 259 breeding pairs with 79% below 10 pairs and 93% below 20 pairs. The total number of breeding pairs has increased by nearly 30% since 2003 but is comparable to the number found in 1993. The number of colonies has increased steadily over time and is more than double that found in 1993. The increase is due entirely to the proliferation (30 vs 86) of yellow-crowned night herons over this time. The number of colonies of great egrets (7 vs 3) and green herons (11 vs 4) has declined over this same time.

Population changes of herons within urban areas should be viewed within the larger context of the state-wide population. Great egrets continue to expand their breeding range westward in Virginia and the broader population has increased significantly over the past 30 years. However, tension continues between urban-nesting pairs and landowners and several breeding locations have been lost. Urban-nesting pairs of yellow-crowned night herons represent a significant percentage of the state-wide population. Yellow-crowns have been declining within other breeding locations but have experienced resurgence within urban areas. Although green herons breed widely throughout the state, population estimates have always been poor due to the difficulty of surveying for them. Several important breeding sites within urban areas have been lost over the past 30 years resulting in a significant decline of the known population. Causes for these losses remain unclear.

BACKGROUND

Context

In Virginia, colonial waterbirds include herons, egrets, ibises, gulls, terns, skimmers, cormorants, and pelicans. These birds share the unusual characteristic of nesting in dense assemblages. The result of this behavior is that they typically breed in very few locations such that the loss of a few breeding areas may have profound consequences on a population level. Due to their position in the aquatic food web, they are considered to be good indicators of ecosystem health. The most significant threats to colonial waterbirds include human disturbance, predation, habitat loss, and contaminants. Protection of sensitive colonies depends on the availability of timely locational information. Development of strategic management plans to protect these species and breeding areas requires a broader understanding of population trends.

For the years prior to the mid-1970s, systematic information on the abundance and distribution of colonial waterbirds in Virginia does not exist. Information during this period is available only from scattered nesting records (e.g. Murray 1952), accounts of individual colonies (e.g. Abbott 1955), and area bird lists (e.g. Grey 1950). During the 1975 and 1976 breeding seasons, the first systematic survey of wading bird colonies in coastal Virginia was completed in association with a broad-based survey covering the entire Atlantic Coast (Custer and Osborn 1977). During 1977, the first systematic survey of all colonial waterbird species was conducted in association with the "Maine to Virginia" project (Erwin and Korschgen 1979). In the early 1980s an additional survey was conducted in association with a broad status assessment (Spendelow and Patton 1988). All three of these surveys focused primarily on the coastal fringe and did not attempt to cover the entire Coastal Plain. In 1993, a systematic survey was conducted that covered the entire Coastal Plain from the outer coastline to the fall line (Watts and Byrd 1998). This survey was the most comprehensive assessment to date of the colonial waterbird community in coastal Virginia. The effort covered 446 colonies supporting an estimated 94,947 pairs of 24 species. In 1992, prior to the 1993 survey, a decision was made by the community of agencies and organizations concerned with waterbirds to repeat the survey on ten-year intervals to monitor trends. In keeping with this agreement, the survey was repeated in 2003 (Watts and Byrd 2006). Following the 2003 survey a decision was made by the collective partners to reduce the survey interval to five years. Systematic surveys were conducted in 2008 (Watts and Paxton 2009) and 2013 (Watts and Paxton 2014). The 2018 survey represents a continuation of the series.

OBJECTIVES

The overall objective of this effort is to assess the status and distribution of colonial waterbird species nesting in the Coastal Plain of Virginia. Information collected is intended to (1) be integrated into biological databases to be used in the environmental review process and (2) provide information for comparison to past and future surveys for the purpose of assessing long-term population trends. The objective of the sub-project reported here is to survey urban heronries throughout the cities of Newport News, Hampton, Norfolk, Virginia Beach, Portsmouth and Chesapeake.

METHODS

Geographic Focus

This sub-project focused on the independent cities of Lower Tidewater including Norfolk, Virginia Beach, Newport News, Hampton and Portsmouth. The footprint of the survey included residential neighborhoods, parks and other lands surrounding significant estuaries. Surveyed areas were consistent with all the other colonial waterbird surveys within the series (1993, 2003, 2008, 2013).

Colony Surveys

Between 10 April and 3 July, 2018 we systematically drove or walked through neighborhoods and other urban areas throughout the study area to survey for nesting herons. Once detected, nests were mapped and examined for nesting stage and nest substrate. Nests were individually counted and grouped by colony. Groups of breeding pairs were considered independent colonies if they were: (1) separated from other groups within a continuous habitat by at least 400 m, (2) separated from other groups by a distinctive barrier, or (3) separated from other groups by a significant habitat discontinuity. All colonies were given a unique alpha-numeric code and surveyed.

Population Estimates

Colony size was based on counts of active nests. Population size was presented as breeding pairs. Breeding pairs were determined on a colony by colony basis from the count of active nests and compiled to generate an overall population estimate.

RESULTS

We located, mapped and surveyed 90 colonies of nesting herons within the study area during the 2018 breeding season (Figure 1, Appendix 1). Colonies contained 1,179 pairs of three species including great egrets, yellow-crowned night herons and green herons (Table 1). Colony size varied from 2 to 259 breeding pairs with 79% below 10 pairs and 93% below 20 pairs. The majority (97%) of all colonies supported only one species with three containing both yellow-crowned night herons and green herons. All of the larger colonies (>100 pairs) were great egret colonies. The total number of breeding pairs has increased by nearly 30% since 2003 but is comparable to the number found in 1993. The number of colonies has increased steadily over time and is more than double that found in 1993. The increase is due entirely to the proliferation (30 vs 86) of yellow-crowned night herons over this time. The number of colonies of great egrets (7 vs 3) and green herons (11 vs 4) has declined over this same time.

Figure 1. Distribution of heron colonies located in lower Tidewater, Virginia during the 2018 breeding season.

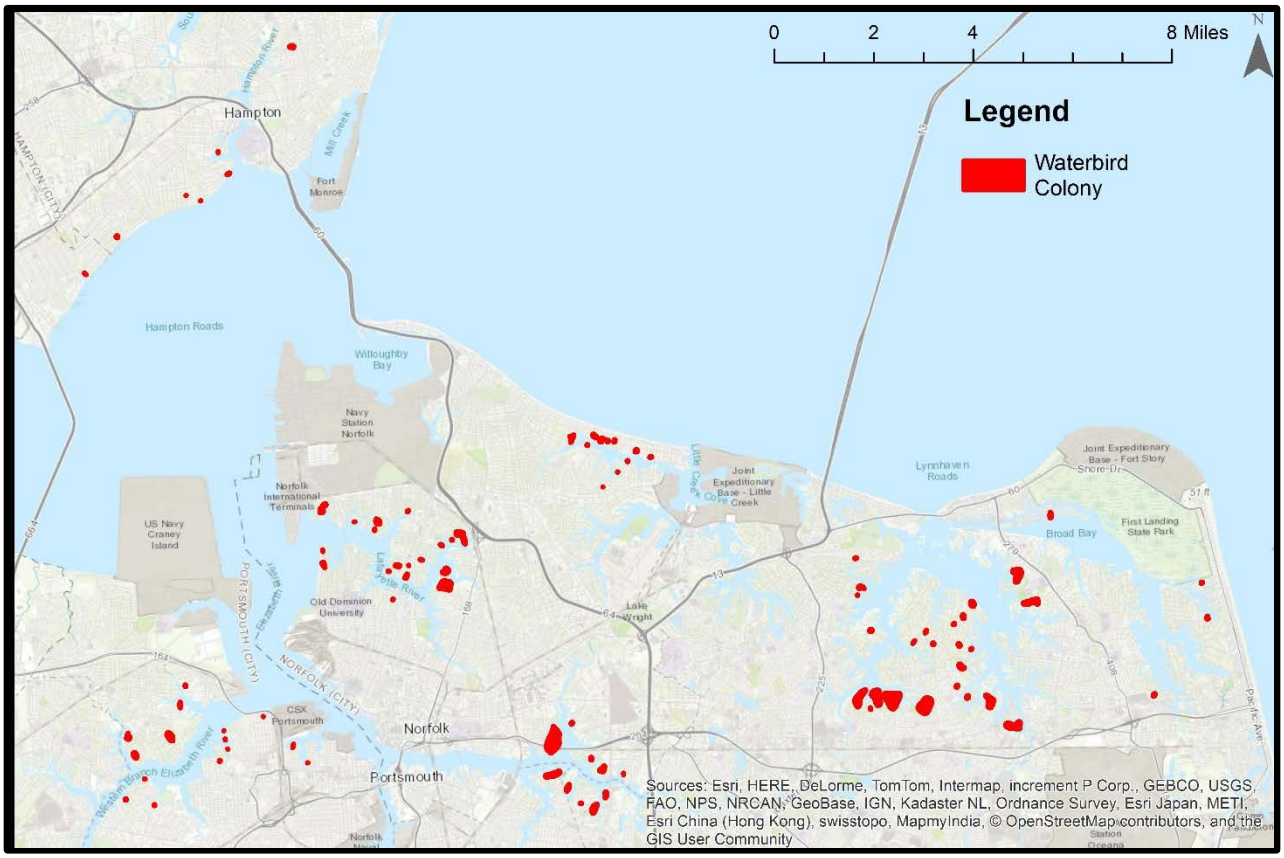


Table 1. The number of breeding pairs and colonies (n) of herons found in urban areas of lower Tidewater, Virginia (1993-2018).

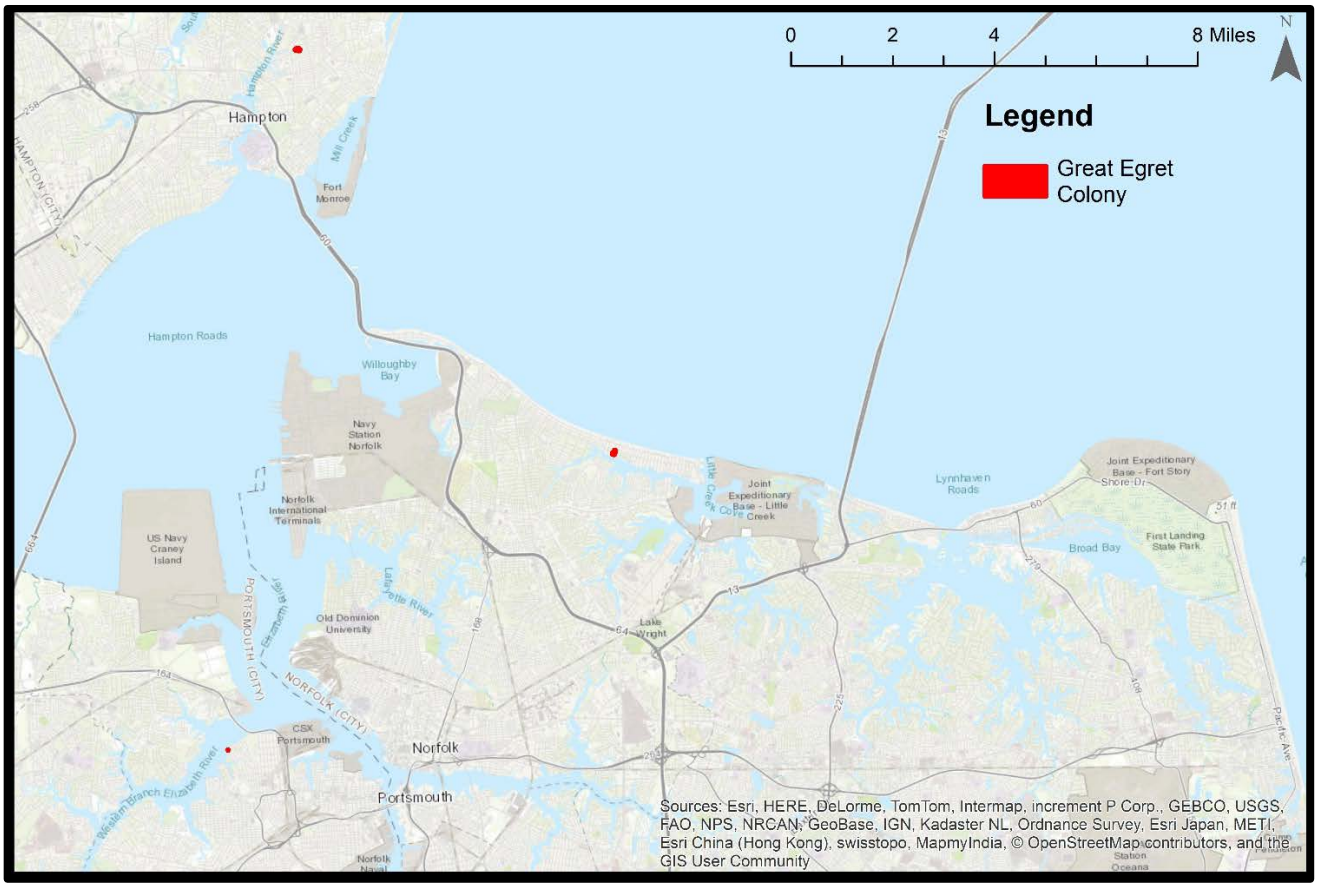
Species	1993	2003	2013	2018
Great Egret	785(7)	586(3)	602(4)	611(3)
Yellow-crowned Night Heron	316(30)	234(38)	288(57)	555(86)
Green Heron	37(11)	25(7)	23(7)	13(4)
Total	**1,138(40)**	**845(44)**	**913(63)**	**1,179(90)**

Great Egret

Only three great egret colonies including 611 pairs were located within the study area during the 2018 breeding season (Figure 2). All colonies were located within pine stands that were greater than 80 years old. Three colonies is less than half of what was present in 1993. The decline reflects the ongoing tension between residential neighborhoods and great egret colonies. None of the colonies surveyed in 1993 were

still present in 2018. The colony along Indian River Road near Campostella that has been used since the late 1990s was lost since 2013. All of the nest trees have been removed from this site. The colony in the Lynn Shores section of Portsmouth has moved from Park Road to Lynn Drive since 2013 and has been moved four times since 2003. The current location is over a single house that is now for sale and will not likely be allowed to persist. The colony in the Hampton Shores section of Hampton has spread out over a larger area since trees were removed from the colony. This colony formed after the site used since the 1980s was removed. The colony near Ocean View in Norfolk has been used since 2008 and has grown dramatically since that time. The colony surrounds an apartment complex and several homes.

Figure 2. Distribution of great egret colonies in urban areas of lower Tidewater, Virginia during the 2018 breeding season.

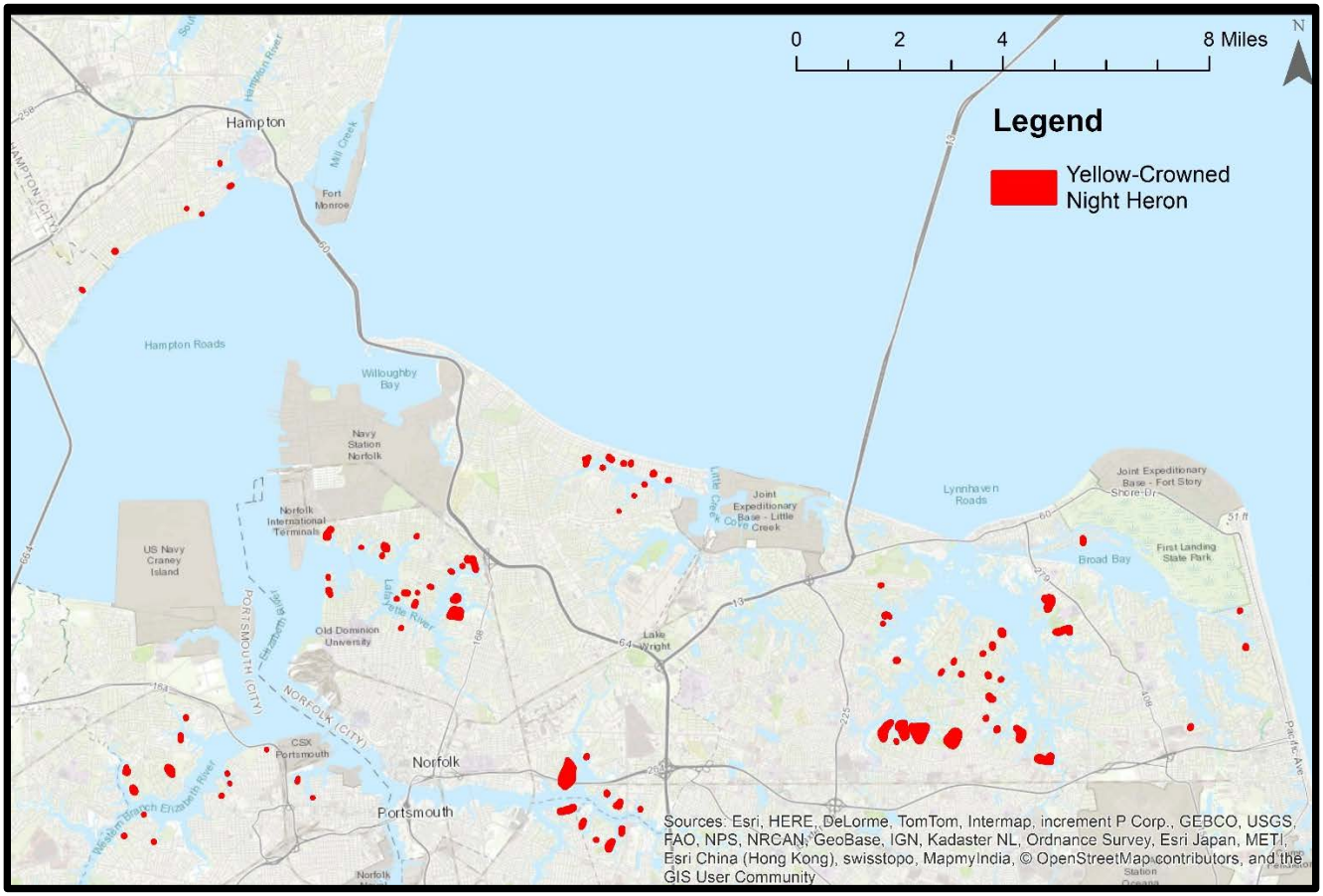


Yellow-crowned Night Heron

The survey of yellow-crowned night herons included the highest number of both pairs and colonies recorded within the study area since surveys were initiated in the mid-1980s. All but one of these colonies were located in stands of loblolly pines. The lone deciduous colony was in oaks. The increase in colonies reflects both the increase in pairs and dispersion of pairs away from some long-held colonies. The

concentration of pairs has shifted over the decades away from some estuaries and into others. Of particular interest has been the increase of pairs and colonies in areas around the Lafayette River, Little Creek and the Lynnhaven River. There has been a clear resurgence of pairs and colonies around the Lafayette and pairs have moved back into historic strongholds like the Lakewood neighborhood and the areas around the Hermitage where numbers have been low in recent decades. Pairs around Little Creek have shifted from the Oceanview and Bayview areas toward the Little Creek Road area. Of similar interest has been the loss of birds from Hampton and Newport News breeding areas. Since the 1980s one of the breeding strongholds has been neighborhoods surrounding the upper reach of the Hampton River. Hurricane Isabel caused significant tree damage within the heart of this area and the herons have never recovered and have continued do decline since that time. The population in neighborhoods west of Chesapeake Avenue has also declined over the past two decades.

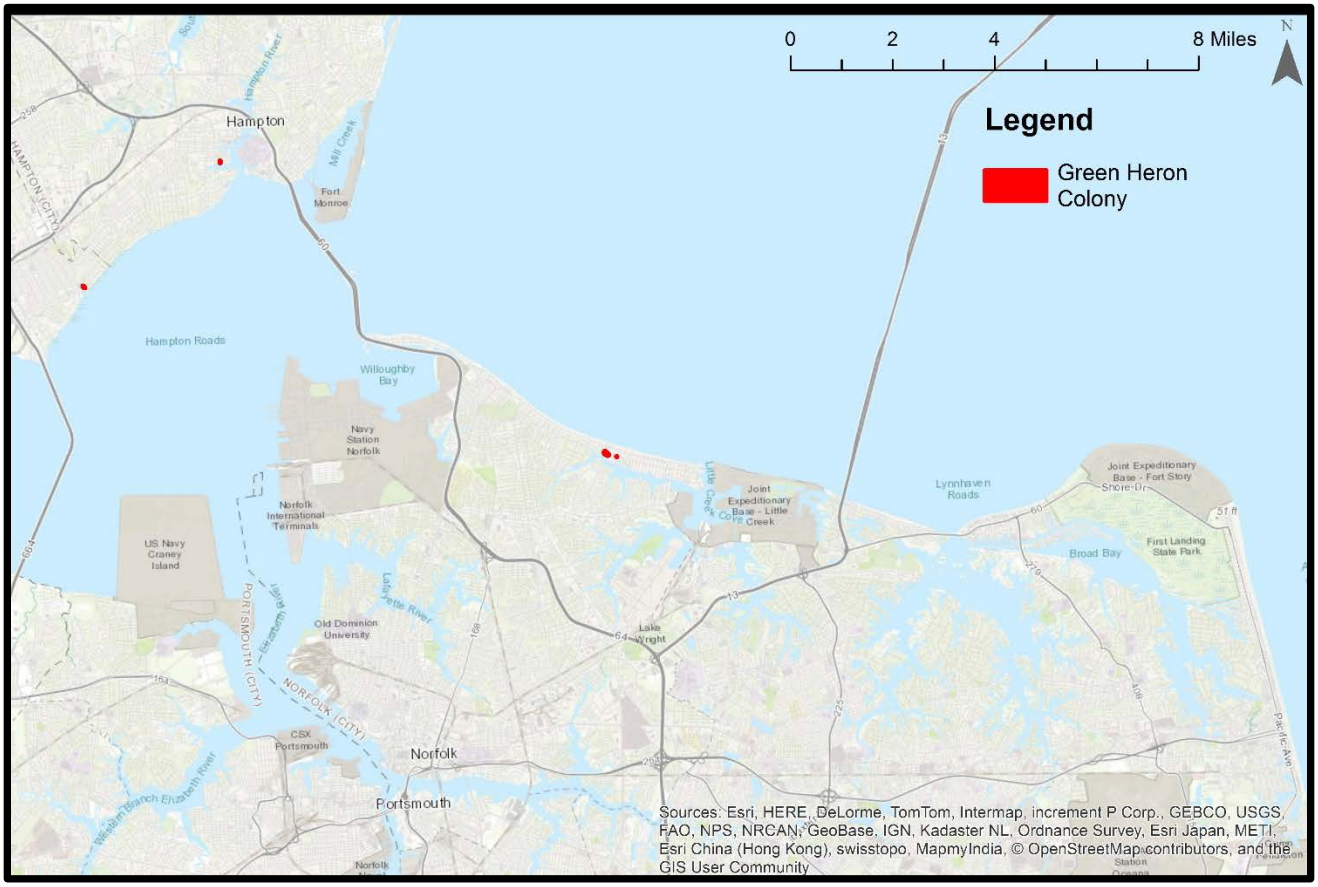
Figure 3. Distribution of yellow-crowned night heron colonies in lower Tidewater, Virginia during the 2018 breeding season.



Green Heron

Only four colonies of green herons were found within urban neighborhoods during the 2018 breeding season. This is the lowest number of colonies and pairs since surveys were initiated within the study area during the mid-1980s. Two of these colonies were within loblolly pine stands and associated with yellow-crowned night heron colonies. The remaining two colonies were within live oaks. Due to their small size and inconspicuous nests, green herons have never been surveyed effectively in Virginia. Even so, the decline of pairs within traditional nesting areas has been clear. Several areas that have supported nesting pairs over the past 30 years did not support nesting in 2018. The cause of these losses is unclear and does not appear to be related to any tension between the birds and landowners. Most landowners that have had green herons nesting on their property over the past 30 years have been unaware of their nests.

Figure 4. Distribution of green heron colonies in lower Tidewater, Virginia during the 2018 breeding season.



DISCUSSION

During the 2018 breeding season, urban areas of lower Tidewater, Virginia supported the highest number of heron pairs and colonies recorded since 1993. Species supported included great egrets, yellow-crowned night herons and green herons. The increase in colonies and pairs is due solely to resurgence in the population of yellow-crowned night herons that accounted for more than 90% of all colonies. The number of colonies and pairs declined for both great egrets and green herons.

Great Egret

The statewide population of great egrets in Virginia has increased three fold between 1993 and 2013 (Watts and Paxton 2014). This species has historically had a breeding distribution skewed to the coast. Over the past 20 years, an increasing number have colonized inland colonies of great blue herons particularly within the extensive swamps of the Chickahominy, Blackwater, Nottoway, and Meherrin drainages and have progressively moved west through the Coastal Plain and into the Piedmont. Aside from these advances toward the fall line, populations in most other regions of the state are experiencing stress. Several urban colonies have been lost over the past 30 years (Watts, unpublished data) as residential neighborhoods move them out. Nearly all of these colonies have been lost as vacant lots that supported them have been developed. This process of exclusion is continuing and resulting in the churning of colony locations and the loss if egrets as a nesting species within several estuaries.

Yellow-crowned Night Heron

The yellow-crowned night heron likely bred in Virginia in the 1800s but was apparently absent by the early 1900s. The first modern breeding record for Virginia was in 1947 (Darden 1947). This event corresponds with a range expansion from the southeast northward to New England (Watts 1995). In Virginia, yellow-crowns increased within urban areas of Norfolk, Hampton, Virginia Beach, and Portsmouth at least through the early 1990s (Watts unpublished data). Since this time the population has experienced a decline in both the urban areas and also within mixed-species heronries along the seaside of the Delmarva. The underlying reason for the decline in non-urban areas is unclear. Within urban areas pairs have experienced ongoing pressure from fish crows and from landowners that have bounced them from property to property over time. Despite these disruptions, the population within urban areas has increased dramatically since 2013 and appears to be adjusting distribution to avoid properties where they are not welcome.

Green Heron

Green herons appear to nest widely in low densities throughout Virginia. Due to their broad distribution, cryptic coloration and small nests, none of the colonial waterbird surveys have adequately covered this species. We have never had good estimates of the population in Virginia. Despite survey difficulties it has been clear over the past few decades that some colony locations that used to be occupied by several pairs are no longer being used. This is true within urban neighborhood, along the seaside of the Delmarva and on Chesapeake Bay islands.

ACKNOWLEDGMENTS

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