

**PENNSYLVANIA GAME COMMISSION
BUREAU OF WILDLIFE MANAGEMENT
PROJECT ANNUAL JOB REPORT**

PROJECT CODE NO: 06750

TITLE: Wildlife Diversity Research/Management

JOB CODE NO: 70004

TITLE: Colonial Waterbird Nesting Study

PERIOD COVERED: 1 July 2015 to 30 June 2016

COOPERATING AGENCIES AND ORGANIZATIONS: Pennsylvania Department of Conservation and Natural Resources; East Stroudsburg University; U.S. Department of Agriculture, Federation of Sportsmen's Clubs in York; Audubon Pennsylvania and associated chapters, Pennsylvania Society for Ornithology; Three Rivers Birding Club; York City Parks Department; Bird Refuge of York County.

WORK LOCATION(S): Statewide

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ABSTRACT This project inventories and monitors colonial waterbird populations in Pennsylvania. Great egret, black-crowned night-heron, yellow-crowned night-heron and common tern are endangered in Pennsylvania. The 2015 Wade Island survey identified 133 great egret, 34 black-crowned night-heron, and 69 double-crested cormorant nests. Seventeen additional great egret nests were found at Kiwanis Lake. Black-crowned night-herons were found in 3 colonies, decreased 5% across surveyed sites from 142 to 134 in 2015. Eleven yellow-crowned night-heron nests were found clustered in Harrisburg. Common terns nested at Presque Isle State Park.

OBJECTIVES

1. Survey all great egret, black-crowned and yellow-crowned night-heron and the largest great blue heron colonies, annually.
2. Monitor all colonial waterbirds by inventorying breeding sites, every 5 years.
3. Using survey data, protect known colonies of wading birds through the environmental review process and work with landowners and conservation partners to protect sites and to educate the public about these vulnerable species for the continued enjoyment of the state's citizens.

METHODS

Volunteers, cooperators, and Pennsylvania Game Commission biologists counted as many of the nests in all colonies known to support great egret, and black-crowned, yellow-crowned night-herons. In addition, nests in the largest great blue heron colony were counted, and reports of nests at other sites were collected opportunistically. Volunteers were recruited through press releases, the PABIRDS Listserv, and the Pennsylvania Game Commission website; and used a standard protocol and datasheet. Counts were conducted from the ground at previously and newly identified locations. Nests were counted during surveys if they appeared to be active during the 2015 breeding season. Newly discovered colonies were entered into the Pennsylvania Natural Diversity Index for protection through the environmental review process.

Great blue heron is not endangered, threatened, or Species of Greatest Conservation Need (Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission 2015), but it is especially vulnerable to disturbance like other colonial nesting waterbirds. Since colonies concentrate populations in small areas they put a high proportion of the population at risk if disturbed. Because of their vulnerability and conservation value, larger colonies are tracked annually. A comprehensive statewide survey of great blue heron colonies is not planned again until 2017.

Educational outreach is a strategy used by the agency to engage the public in reporting heron nests and colonies, especially new ones, and to protect heron colonies through education. The Pennsylvania Game Commission's website hosts colonial birds pages, including species-specific pages for great egret, black-crowned night-heron, yellow-crowned night-heron, and common tern, as well as general information on herons and Wade Island. The target audience for these pages is educators, students, and adults interested in wildlife and conservation.

RESULTS

The Wade Island survey in Dauphin County was conducted on 6 May 2015. Leaf out was nearly complete, making nests difficult to find and assign to species. The survey team found 133 great egret, 34 black-crowned night-heron, and 69 double-crested cormorant nests during the survey (Fig. 1). Many of the black-crowned night-heron nests were either under construction or recently completed, suggesting the nesting population was larger than the nests counted in the official survey. Surveys of common tern also are included in this report.

Great Egret (*Ardea alba*; Pennsylvania [PA] Status - Endangered)

Great egrets were found nesting at 2 locations: Wade Island, Dauphin County and Kiwanis Lake, York County. At Wade Island, 133 nests were found, similar to the 10-year average of 140 nests. With 17 nests at the Kiwanis Lake colony, there were 150 great egret nests found statewide in 2015.

Black-crowned Night-Heron (*Nycticorax nycticorax*; PA Status – Endangered)

The black-crowned night-heron population in Pennsylvania continues to be critically low with only 3 colonies active in 2015 (Table 1). Colonies are found only in urban or suburban settings in southeastern counties, and are particularly vulnerable to human disturbance. The majority of birds are nesting in 3 locations: Kiwanis Lake, Wade Island, and Ephrata Hospital (Table 1). Black-crowned night-heron nest numbers decreased 5% across surveyed sites from 142 to 134 in 2015.

The Ephrata Hospital colony increased slightly to 68 nests and is now the largest Black-crowned Night-Heron colony in the state. Wade Island formerly the largest colony, decreased to 34 nests. The Kiwanis Lake colony increased to 32 nests. Cumberland County sites were not surveyed in 2015. The geographic distribution of the state's population has drastically constricted from its former wider distribution (Master 2012). Any disturbance, human or natural, at these sites would jeopardize the species' persistence and viability in the state.

Yellow-crowned Night-Heron (*Nyctanassa violacea*; PA Status – Endangered)

Eleven nests were clustered in or near Harrisburg, Dauphin County. Cumberland County sites were not surveyed in 2015. Yellow-crowned night-herons continue to demonstrate their tolerance of some human activities by nesting in mature trees close to human habitation, in backyards and over roadways in town near the Susquehanna River and its tributaries.

Common Tern (*Sterna hirundo*; PA Status - Endangered)

In 2012, after a 40-year absence, common tern returned as a nesting bird to Pennsylvania. In the Gull Point Natural Area at Presque Isle State Park, Erie County, 2 pairs nested in both 2012 and 2014. During the 2015 nesting season, the number of individuals fluctuated, with up to 25 to 30 individuals seen and a minimum of 8 pairs nested. All of the nests failed due to flooding or predation.

Double-crested Cormorant (*Phalacrocorax auritus*; PA Status – Secure)

The number of cormorant nests on Wade Island decreased 33% to 69 (Fig. 1). However, a new colony was found in Lancaster County with an additional 10 nests, bring the population statewide up to 79 nests. Cormorants were removed from Wade Island again in 2015. One hundred forty-six cormorants, 103 adults and 43 juveniles, were culled during the breeding season by U.S. Department of Agriculture Wildlife Services personnel. The management concern is that double-crested cormorants may displace great egrets and black-crowned night-herons from critical nesting areas and that cormorant guano deposited under nests can kill the trees used by other colonial nesting species of conservation concern (Master 2001, Sullivan et al. 2006). The 2016 cormorant nest count will help evaluate the effectiveness of the 4 full seasons of culling.

Great Blue Heron (*Ardea herodias*)

Volunteers and staff reported on 34 great blue heron colonies, totaling 720 nests (Table 1). The Barrows colony is the largest great blue heron colony in the state with 260 nests.

Colonial waterbird educational outreach

During 2015 the Pennsylvania Game Commission colonial waterbird web site species pages were viewed 9656 times, about half as often as the previous year.. We found more nests and colonies through the contributions of volunteers and conservation partners in part due to these educational products and outreach. Since so many colonies are in the urban landscape, this approach is essential for successful protection of nests. These are supplemented by articles in the Pennsylvania Game News.

RECOMMENDATIONS

1. Monitor the Wade Island colony and improve protection with additional restricted area

signs. Limit annual survey to less than 2 hours to minimize disturbance.

2. Survey all colonies of black-crowned night-heron, yellow-crowned night-heron, great egret and the largest great blue heron colonies, annually. Engage volunteers in the surveys to maximize coverage and interest.

3. Educate private landowners hosting colonial waterbird colonies of the value of the birds and provide them with guidelines for colony protection. Inform Regional Wildlife Diversity Biologists about these colonies and the landowners when possible. Provide more Pennsylvania Game Commission educational materials, including website pages, to educate the public about colonial waterbird colony protection.

4. Maximize protection of nesting black-crowned night-herons at Kiwanis Lake, by working with Audubon Pennsylvania and the York City Parks Department, and obtain additional counts to improve estimate of colony size and survey Lake Williams and Lake Redmond for black-crowned night-heron nests.

5. Continue spring and fall surveys of Barrows colony, ensure protection of nesting habitat and evaluate colony stability.

6. Survey islands adjacent to Wade Island for nesting black-crowned night-heron, great egret and double-crested cormorant. Investigate the relationship between cormorants, night-herons, egrets, and colony trees.

7. Improve outreach to volunteers and watershed organizations for heron colony information, including identifying new colonies that might otherwise go undetected.

8. Monitor Gull Point Natural Area, Presque Isle State Park for common tern nesting activity and investigate source of predation related to nest failures.

LITERATURE CITED

Master, T. 2001. Threat assessment and management recommendations for Wade Island: a management plan. Technical Report. Wildlife Diversity Section, Pennsylvania Game Commission, Harrisburg, USA.

Master, T. 2012. Black-crowned Night-Heron, *Nycticorax nycticorax*. Pages 130–131 in A. M. Wilson, D. W. Brauning, and R. S. Mulvihill, editors. Second Atlas of Breeding Birds in Pennsylvania. Pennsylvania State University Press, University Park, USA.

Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission. 2015. Pennsylvania Wildlife Action Plan, 2015-2025. C. Haffner and D. Day, editors. Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission, Harrisburg, Pennsylvania.

Sullivan, K. L., P. D. Curtis, R. B. Chipman, and R. D. McCullough. 2006. The double-crested cormorant: issues and management. Department of Natural Resources Cornell University,

Ithaca, New York, USA.

Table 1. Colonial waterbird sites surveyed in 2015, by species.

Site Name	Species	Nests
Adams	great blue heron	20
Bradford	great blue heron	6
Bucks - 1	great blue heron	1
Bucks - 2	great blue heron	37
Bucks - 3	great blue heron	4
Bucks - 4	great blue heron	34
Bucks - 5	great blue heron	6
Bucks - 6	great blue heron	15
Butler	great blue heron	3
Chester - 1	great blue heron	12
Chester - 2	great blue heron	12
Chester - 3	great blue heron	13
Chester - 4	great blue heron	1
Cumberland	great blue heron	Multiple
Dauphin - 1	yellow-crowned night-heron	1
Dauphin - 2	yellow-crowned night-heron	1
Dauphin - 3	yellow-crowned night-heron	2
Dauphin - 4	yellow-crowned night-heron	8
Dauphin - 5	yellow-crowned night-heron	1
Dauphin - 6	great blue heron	22
Dauphin - 7	black-crowned night-heron	34
Dauphin - 7	great egret	133
Dauphin - 7	double-crested cormorant	69
Jefferson	great blue heron	10
Lancaster - 1	great blue heron	15
Lancaster - 2	great blue heron	12
Lancaster - 3	double-crested cormorant	10
Lancaster - 3	great blue heron	10
Lancaster - 4	black-crowned night-heron	68
Lancaster - 5	great blue heron	28
Lancaster - 6	great blue heron	13
Lebanon - 1	great blue heron	21
Lebanon - 2	great blue heron	8
Lehigh	great blue heron	30
Mercer	great blue heron	260
Montgomery - 1	great blue heron	35

Table 1. cont.

Site Name	Species	Nests
Montgomery - 2	great blue heron	14
Montgomery - 3	great blue heron	4
Northampton	great blue heron	30
Venango	great blue heron	4
Westmoreland - 1	great blue heron	20
Westmoreland - 2	great blue heron	20
York	black-crowned night-heron	32
York	great egret	17

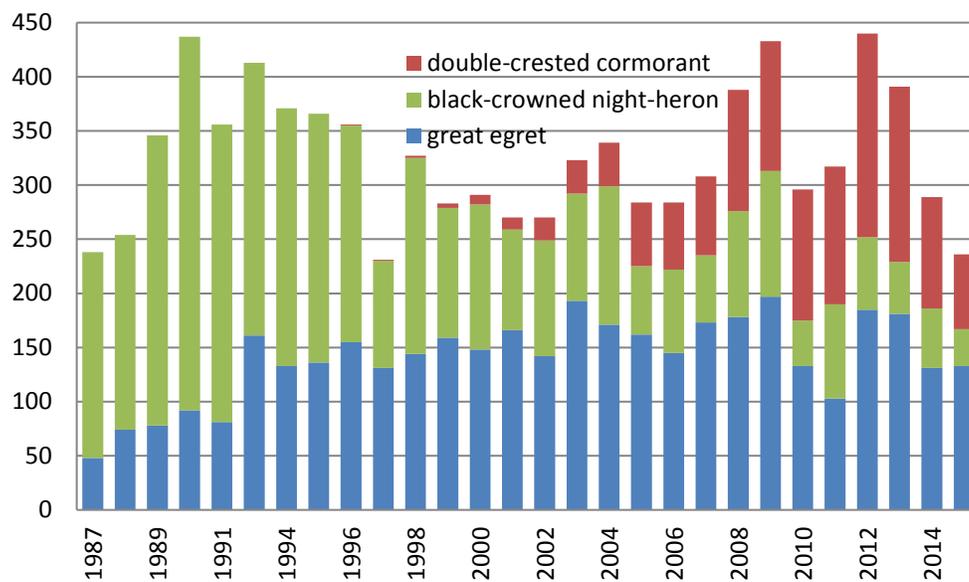


Figure 1. Colonial bird nests found on Wade Island, Dauphin County, Pennsylvania, 1987-2015 by year and species.