

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

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TITLE: Wildlife Diversity Research/Management

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TITLE: Colonial Waterbird Nesting Study

PERIOD COVERED: 1 January 2014 to 31 December 2014

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, and yellow-crowned night-heron are endangered in Pennsylvania. The annual Wade Island 2014 survey identified 131 great egret, 55 black-crowned night-heron, and 103 double-crested cormorant nests. Seventeen great egrets also nested at Kiwanis Lake, York County. Black-crowned night-herons were found in 5 colonies, increasing 41% across surveyed sites from 101 in 2013 to 142 in 2014. Nineteen yellow-crowned night-heron nests were found at 3 different sites.

OBJECTIVES

1. Monitor all colonial waterbirds by inventorying breeding sites, every 5 years.
2. Survey all great egret, black-crowned and yellow-crowned night-heron and the largest great blue heron colonies, annually.
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 (PGC) biologists counted as many of the nests in all colonies known to support great egret, and black-crowned and yellow-crowned night-herons. Also counted were nests in the state's largest great blue heron and other sites opportunistically during the 2014 breeding season. Volunteers were recruited through press releases, the PABIRDS Listserv, and the PGC 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 2014 breeding season. Newly discovered colonies were entered into the Pennsylvania Natural Diversity Index for protection through the environmental review process.

RESULTS

The Wade Island survey in Dauphin County was conducted on 9 May 2014. Leaf out was nearly complete, making nests difficult to find and assign to species. The survey team found 131 great egret, 55 black-crowned night-heron, and 103 double-crested cormorant nests during the survey (Fig. 1). In May, many of the black-crowned night-heron nests were either under construction or recently completed, suggesting the nesting population is larger than the nests counted in the official survey.

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

Great egrets were recorded nesting at 2 locations: Wade Island, Dauphin County and Kiwanis Lake, York County. At Wade Island, 131 nests were found, this is below the 10-year average of 159 nests, but similar to all but the highest counts in recent years. With the 17 nests at the Kiwanis Lake colony, there were a total of 148 nests in 2014.

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

The black-crowned night-heron population in Pennsylvania continues to be low with only 5 colonies active in 2014 (Table 1). Colonies are found now only in urban or suburban settings in southeastern counties, and are particularly vulnerable to human disturbance. Black-crowned night-heron nest numbers increased 40.6% across surveyed sites from 101 in 2013 to 142 in 2014. The Kiwanis Lake colony declined to 19 nests. The Ephrata Hospital colony numbers continue to fluctuate with a slight increase to 66 nests in 2014. The Wade Island colony was up slightly to 55 nests. The Wyomissing Hills site was vacant in 2014, but a new 2-nest colony was found in Cumberland County. The geographic distribution of the state's population has drastically constricted from its former wider distribution (Master 2012). The majority of birds are nesting in 3 locations: Kiwanis Lake, Wade Island, and Ephrata Hospital (Table 1). 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)

The yellow-crowned night-heron is critically endangered in Pennsylvania, but there was a modest improvement in its population in 2014. Nineteen nests were found at 3 different sites. Additional locations were located by staff from tips from the interested public. All nesting colonies are clustered in or near Harrisburg in Dauphin and Cumberland counties. Yellow-crowned night-herons are fairly tolerant of some human activities and readily nests in wooded settings close to human habitation, including backyards, near streams and in town near the Susquehanna River and

its tributaries. Their habit of foraging near dusk and at night helps them to co-exist with people. The tendency of this species to nest in urban landscapes makes it vulnerable to disturbance, but at the same time provides an opportunity to engage the public in its protection.

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

This colonial waterbird has increased in population and nesting range throughout Northeastern United States since the nineteenth century except during the DDT pesticide era from which it continues to recover and gain ground as a nesting species and passage migrant (Hatch 1995, Hatch and Weseloh 1999, McWilliams and Brauning 2000, Wires and Cuthbert 2006). The first nesting during the current expansion was found at Wade Island in July 1996 (McConaughy 1996); it was not identified before or during in the first Pennsylvania Breeding Bird Atlas (Brauning 1992, McWilliams and Brauning 2000).

The nesting cormorant population decreased 36.4% to 103 nests in 2014 (Fig. 1). The management concerns about double-crested cormorants are that cormorants may displace great egrets and black-crowned night-herons from critical nesting areas and that cormorant guano deposited under nests can kill the nest trees used by other colonial nesting species (Master 2001, Sullivan et al. 2006). Cormorants were removed from Wade Island again in 2014. Two hundred forty-one cormorants, 171 adults and 70 juveniles, were culled during the breeding season by U.S. Department of Agriculture Wildlife Services personnel. The 2015 cormorant nest count will help evaluate the effectiveness of the 3 full seasons of culling.

Great Blue Heron (*Ardea herodias*)

Great blue heron is not listed as an endangered, threatened, or Species of Greatest Conservation Need, but is especially vulnerable to disturbance like other colonial nesting waterbirds. Since the colonies concentrate populations in small areas they put a high proportion of the species' 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 anticipated again until 2017. Reports from volunteers and staff came from 331 colonies, totaling active 994 nests (Table 1). The Barrows colony in Mercer County, a Pennsylvania Audubon Important Bird Area, continues to be the largest great blue heron colony in Pennsylvania. In 2014 there were 255 nests; about 25% of the state's known population.

Colonial waterbird educational outreach

Educational outreach is a strategy used by the agency to protect heron colonies. The PGC has found more colonies through the contributions of volunteers and conservation partners.

The PGC's website hosts colonial birds pages, including species specific pages for great egret, black-crowned night-heron, and yellow-crowned night-heron, as well as general information on herons and Wade Island. During 2014 these pages were viewed 16,508 times. The target audience for these pages is educators, students, and adults interested in wildlife and conservation.

An article was published in Pennsylvania Game News that highlighted a colony in a Harrisburg neighborhood, a learning experience for the people there (Kosack 2014). This article also reaches a wide audience including people that may not be accessing the agency's website pages.

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 values 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 PGC 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. Survey the Conodoquinet Creek and the Yellow Breeches Creek for yellow-crowned night-heron nests with the assistance of watershed organizations, East Stroudsburg University, and local volunteers, and work with landowners to protect any nests found.

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

9. Engage the public in monitoring and conserving colonial water bird colonies.

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Table 1. Colonial waterbird sites surveyed in 2014, by species.

County	Site Name	Species	Nests
Adams	Spring Grove/ Mill Road	great blue heron	0
Bedford	SGL 97	great blue heron	15
Berks	Berks Tech Institute	black-crowned night-heron	0
Berks	Cacoosing Creek Complex	great blue heron	54
Berks	Oley	great blue heron	15
Berks	Stone Creek	great blue heron	18
Blair	Bald Eagle	great blue heron	23
Blair	SGL 166	great blue heron	18
Bucks	John Morgan Creek	great blue heron	42
Bucks	Lake Nockamixon 2	great blue heron	43
Bucks	Mill Creek-Holland	great blue heron	4
Bucks	Quakertown Swamp	great blue heron	10
Bucks	Three Mile Run	great blue heron	25
Chester	Equivine Farm	great blue heron	8
Chester	Nantmeal Road	great blue heron	0
Chester	Pickering Creek	great blue heron	31
Chester	Springdel	great blue heron	0
Chester	Wyndmere Estates	great blue heron	14
Cumberland	Boiling Springs	great blue heron	0
Cumberland	Colonel Denning State Park	great blue heron	0
Cumberland	Conodoguinet Creek W. Fairview Twp. Park	yellow-crowned night-heron	0
Cumberland	Conodoguinet East Penn Drive	yellow-crowned night-heron	6
Cumberland	Conodoguinet Good Hope Mill	yellow-crowned night-heron	1
Cumberland	Conodoguinet Orrs Bridge Rd	yellow-crowned night-heron	0
Cumberland	SGL 169	black-crowned night-heron	2
Cumberland	Yellow Breeches Creek	great blue heron	0
Cumberland-Franklin	Middle Spring	great blue heron	50
Dauphin	Green Street	yellow-crowned night-heron	4
Dauphin	Hamilton Street	yellow-crowned night-heron	6
Dauphin	Keller & 2nd Streets	yellow-crowned night-heron	1
Dauphin	Milton Hershey	great blue heron	26
Dauphin	Peffer & 3rd Streets	yellow-crowned night-heron	1
Dauphin	Wade Island	black-crowned night-heron	55
Dauphin	Wade Island	great egret	131
Delaware	Little Tincum Island	great blue heron	35
Huntingdon	Saddler Creek - Rte 655	great blue heron	19
Lancaster	Chickies Creek	great blue heron	16
Lancaster	Dead End Road	great blue heron	22
Lancaster	Else Island	great blue heron	10
Lancaster	Ephrata Hospital	black-crowned night-heron	66
Lancaster	Kinzer	black-crowned night-heron	0

Table 1. cont.

County	Site Name	Species	Nests
Lancaster	Middle Creek WMA	great blue heron	37
Lancaster	Piney Island	great blue heron	16
Lebanon	Becks Creek	great blue heron	18
Lebanon	Conewago Creek	great blue heron	30
Mercer	Barrows	great blue heron	255
Mifflin	Chestnut Springs	great blue heron	1
Montgomery	Swamp Creek	great blue heron	45
Montgomery	Towamencin Creek-2	great blue heron	18
Montgomery	Whitehall Road	great blue heron	11
Northampton	Hollo Pines	great blue heron	35
Philadelphia	Mud Island	black-crowned night-heron	0
Philadelphia	Mud Island	great egret	0
Sullivan	World End State Park	great blue heron	10
York	Brunner Island Rivershore	black-crowned night-heron	0
York	Codorus Redman Lake	black-crowned night-heron	0
York	Conewago Brunner Island	yellow-crowned night-heron	0
York	Kiwanis Lake Rookery	black-crowned night-heron	19
York	Kiwanis Lake Rookery	great blue heron	0
York	Kiwanis Lake Rookery	great egret	17
York	Kralltown	great blue heron	0
York	Peach Bottom	black-crowned night-heron	0
York	Spring Grove	great blue heron	20

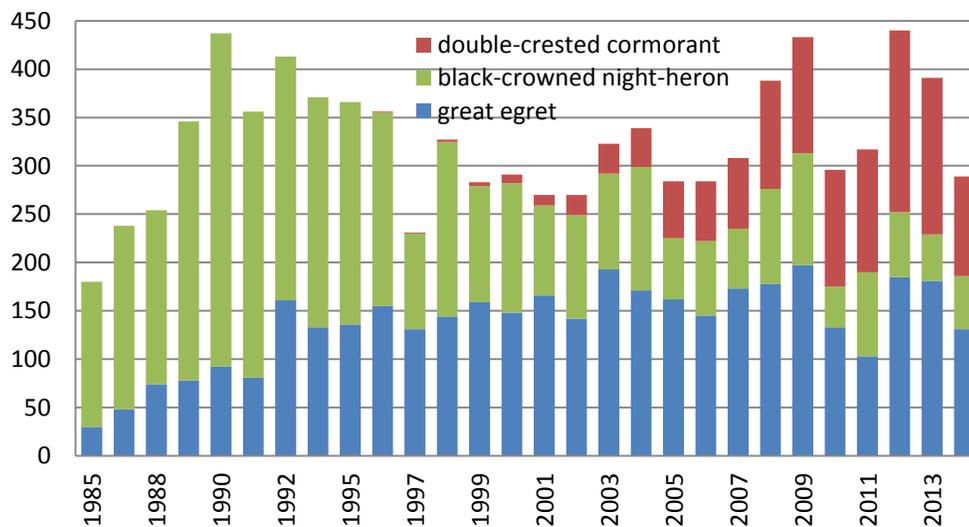


Figure 1. Colonial bird nests found on Wade Island, Dauphin County, PA, 1985-2014 by year and species.