

**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 Nesting Bird Study

PERIOD COVERED: 1 January 2013 to 31 December 2013

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, Pittsburgh; York City Parks Department; Bird Refuge of York County, York.

WORK LOCATION(S): Statewide

PREPARED BY: Alison Fetterman and Patricia Barber

DATE: 30 January 2014

ABSTRACT This project inventories and monitors colonial waterbird populations in Pennsylvania, while reporting on conservation initiatives. Great egret, black-crowned night-heron, and yellow-crowned night-heron are endangered in Pennsylvania. Colonial wading birds are particularly vulnerable because their nests are clustered, putting a large part of the nesting population at risk from natural and human disturbances. The annual Wade Island survey identified 181 great egret, 48 black-crowned night-heron, and 162 double-crested cormorant nests. The state wide survey conducted in 2013 confirmed 55 active colonies of great blue heron in 23 counties. It is recommended that (1) annual surveys of state listed species continue; (2) support continue for conservation measures at Wade Island, Ephrata, and Kiwanis Lake colonies; and (3) efforts continue to identify and conserve yellow-crown night-herons nesting in and near Harrisburg.

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.

METHODS

Volunteers, cooperators, and Pennsylvania Game Commission (PGC) biologists counted as many of the great egret, black-crowned night-heron, yellow-crowned night-heron, and great blue heron nests as possible during the 2013 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 if they appeared to be active during the 2013 breeding season.

RESULTS

The Wade Island survey in Dauphin County was conducted on 2 May 2013. Leaf out was nearly complete, making nests difficult to find and assign to species. The survey team found 181 great egret, 48 black-crowned night-heron, and 162 double-crested cormorant nests during the survey (Fig. 1). In May, many of the black-crowned night-heron nests are 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 in Dauphin County and Kiwanis Lake in York County. At Wade Island, 181 nests were found, representing an above average year (10-year average of 163 nests), similar to the 185 nests in 2012. In 2013, Kiwanis Lake colony was active, 8-10 individuals were observed on 24-26 July. Unfortunately it was too late in the season to determine nest numbers.

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

The black-crowned night-heron population in Pennsylvania continues to decrease; only 4 colonies were active 2013. Colonies are typically in urban or suburban settings in Southeast counties, and are particularly vulnerable to human disturbance. Black-crowned night-heron nests decreased across surveyed sites by 41% from 178 nests in 2012 to 101 nests in 2013. This does not include the Kiwanis Lake colony, which was only observed late in the season, 5 July, where 7 adults and 35 individuals were counted. This suggests that this colony continues to decline (96 nests in 2011, 23 nests in 2012). After seeing a population increase at the Ephrata Hospital colony with 83 nests in 2012, the number of nests in 2013 was down to 50 nests (Table 1). The Wade Island Rookery is also down in numbers from 67 nests in 2012 to 48 nests in 2013, or 28%, although the timing of the survey may underestimate black-crowned nests in a given year, similar timing among years should provide a good estimate of population trends. The Wyomissing Hills site was reestablished at the Berks Technical Institute, where only 3 nests were found but it was a diffuse colony and more birds may be nesting in the area undetected. The geographic distribution of the state's population has drastically changed.

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 in the state. At Kiwanis Lake the black-crowned night-heron decline may have been amplified by the removal of low branches on the conifer trees where the birds nested; this was done several years ago.

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

The yellow-crowned night-heron is critically endangered in Pennsylvania with only 1 colony and 13 nests reported in 2013. 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. Foraging near dusk and at night helps them to co-exist with people. All of the nests found this year were in downtown Harrisburg in large sycamores in backyards or overhanging streets. The nesting sites in Belleview, a historic wooded urban neighborhood in Harrisburg, Dauphin County were inactive, but should continue to be monitored in case the birds return. There were no reports of nesting activity along Conodoquinet Creek or West Fairview, Cumberland County, where there has been nesting recorded in the past. An article about yellow-crowned night-herons was planned for *Pennsylvania Game News* that could raise the profile of this species with the public. Its habit of nesting in urban landscapes make it vulnerable, but also provides opportunities for engagement with 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 19th 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 in the first Pennsylvania Breeding Bird Atlas or previously (Brauning 1992, McWilliams and Brauning 2000).

The nesting cormorant population decreased 13.8% from 2012 with 162 double-crested cormorant nests found on Wade Island in 2013 (Table 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). So cormorants were removed from Wade Island again in 2013. Approximately 250 cormorants, 110 adults and 140 juveniles, were culled during the breeding season by U.S. Department of Agriculture Wildlife Services personnel. The 2014 cormorant nest count will help evaluate the effectiveness of the 2011-2013 cull. One hundred twenty-five of the culled birds were provided to Dr. Nathan Thomas for sampling studies.

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 was initiated 2012 and completed in 2013; 1,416 nests were found in 55 colonies in 23 counties in 2013 (Table 1).

The Barrows colony in Mercer County, a Pennsylvania Audubon Important Bird Area, continues to be the largest great blue heron nesting site in Pennsylvania. In 2013 there were 292

nests; this colony constitutes 20.6% of the state population. The Barrows colony reached a peak of 441 nests in 1999, declining and leveling out in 2009 and 2010 to the present level.

Colonial waterbird electronic education resources

Web pages for colonial birds are hosted on the PGC's website and include 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 2013 these pages were viewed 18,394 times. The target audience for these pages is educators, students, and adults interested in wildlife and conservation.

RECOMMENDATIONS

1. Monitor Wade Island colony and improve protection with additional restricted area signs. Limit annual survey to less than 2 hours to minimize disturbance; and continue an adaptive management approach for endangered species protection.

2. In 2014 survey all colonies of black-crowned night-heron, yellow-crowned night-heron, great egret and the largest great blue heron colonies. Continue engaging volunteers in the surveys.

3. Educate private landowners hosting colonial waterbird colonies of the values of the birds and provide them with guidelines for colony protection. Proactively involve the Regional Wildlife Diversity Biologists with 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. Work with volunteers to continue spring and fall surveys of Barrows colony, and assess the possibility of conservation easements with landowners to ensure protection of nesting habitat and evaluate stability of colony numbers.

6. Survey islands adjacent to Wade Island for nesting black-crowned night-heron, great egret and double-crested cormorant in 2014; and continue research on habitat use and dispersal of night-herons and egrets from this colony. As well as the relationship between double-crested cormorants and the night-herons, egrets, and the state of the colony's supporting 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 2013, great egret (GREG), black-crowned night-heron (BCNH), yellow-crowned night-heron (YCNH), double-crested cormorant (DCCO) and great blue heron (GBHE) "X" indicates that the species was present during nesting season, but a nest was not located. 2012 survey results are provided for comparison.

| County | Site Name | Species | 2013 Nests | 2012 Nests |
|--------------------|--|---------|------------|------------|
| Adams | Spring Grove/ Mill Road | GBHE | - | 28 |
| Allegheny | West Deer | GBHE | 0 | - |
| Allegheny | Deer Creek | GBHE | 0 | 0 |
| Allegheny | Upper Twelve mile Island | GBHE | 13 | - |
| Allegheny | Allegheny Cemetery | GBHE | 0 | - |
| Allegheny | Boyce Mayview Park | GBHE | 8 | - |
| Allegheny | Washington Pike Complex/DDI building | GBHE | 24 | 26 |
| Allegheny | Pinehurst | GBHE | 68 | 30 |
| Armstrong | SGL 137 | GBHE | 0 | - |
| Armstrong | Cosmus | GBHE | 0 | - |
| Armstrong | Mahoning | GBHE | 0 | - |
| Armstrong, Clarion | Clarion Island | GBHE | 12 | 15 |
| Beaver | Hereford Manor | GBHE | 20 | - |
| Beaver | Brush Creek | GBHE | 5 | - |
| Bedford | SGL 97 | GBHE | - | 15 |
| Berks | Berks Tech. Institute | BCNH | 3 | - |
| Berks | Intervilla Avenue , Wyomissing Hills 2 | BCNH | - | 10 |
| Berks | Oley | GBHE | 6 | 6 |
| Berks | Stone Creek , Bethel | GBHE | 22 | 11 |
| Berks | Cacoosing Creek Complex | GBHE | 45 | 41 |
| Berks | Malickson | GBHE | 5 | - |
| Berks | Caputo | BCNH | 0 | - |
| Berks | Hilltop Road | GBHE | 0 | 3 |
| Blair | Bald Eagle | GBHE | - | 13 |
| Blair | SGL166 | GBHE | - | 15 |
| Bradford | Pisgah Mountain | GBHE | - | 0 |
| Bradford | Foster Branch | GBHE | - | 0 |
| Bradford | Burnham Hill | GBHE | - | 0 |
| Bradford | Rt. 187 Sugar Run | GBHE | - | 0 |
| Bradford | Weston Creek | GBHE | - | 0 |
| Bradford | Route 14-Sugar Creek, Troy (PGC) | GBHE | - | 0 |
| Bradford | Northeast Bradford | GBHE | - | 11 |
| Bradford | Sugar Creek (PGC) | GBHE | - | 0 |
| Bradford | SGL #289 | GBHE | - | 0 |
| Bucks | Three mile run | GBHE | 27 | 17 |
| Bucks | Morgan creek | GBHE | 43 | 27 |
| Bucks | Quakertown Marsh | GBHE | 16 | 11 |
| Bucks | Lake Nockamixon | GBHE | 24 | 17 |
| Bucks | Prahl's Island | GBHE | 5 | - |

Table 1. cont.

| County | Site Name | Species | 2013 Nests | 2012 Nests |
|-------------|--|---------|------------|------------|
| Bucks | Mill Creek-Holland | GBHE | 7 | - |
| Butler | Harmony | GBHE | - | 0 |
| Cambria | Slickport | GBHE | 0 | - |
| Cameron | Sinnemahoning State Park | GBHE | 0 | - |
| Centre | Penns Creek | GBHE | - | 3 |
| Chester | Wyndmere/M & M | GBHE | 17 | 9 |
| Chester | Nantmeal road | GBHE | 53 | 26 |
| Chester | Equivine Farm/Strasburg Rd | GBHE | 6 | 4 |
| Chester | Pickering Creek | GBHE | 20 | - |
| Chester | Springdel | GBHE | 8 | - |
| Chester | N Chatham Rd | GBHE | - | 9 |
| Chester | Highland Twp. | GBHE | - | 13 |
| Clarion | Clarion River- Piney Dam | GBHE | - | 0 |
| Clarion | Ridge Camp | GBHE | - | 0 |
| Clarion | Cherry Run Road | GBHE | - | 0 |
| Clinton | SGL 295 | GBHE | - | 10 |
| Crawford | Woodcock Creek | GBHE | - | 0 |
| Crawford | Cussewago Creek Bridge | GBHE | - | 0 |
| Crawford | Conneauttee Creek | GBHE | - | 6 |
| Crawford | Pymatuning macrosite/Tuttle Point Campground | GBHE | - | 7 |
| Cumberland | New colony | GBHE | - | 1 |
| Cumberland, | Middle Spring | GBHE | - | 30 |
| Dauphin | Wade Island | BCNH | 48 | 67 |
| Dauphin | Wade Island | DCCO | 162 | 188 |
| Dauphin | Milton Hershey | GBHE | 14 | - |
| Dauphin | Wade Island | GREG | 181 | 185 |
| Dauphin | Keller & 2nd Streets | YCNH | 1 | - |
| Dauphin | Peffer & 3rd Streets | YCNH | 1 | - |
| Dauphin | Hamilton Street | YCNH | 3 | - |
| Dauphin | 1700 Penn Street | YCNH | 1 | - |
| Dauphin | Green Street | YCNH | 7 | - |
| Delaware | Little Tinicum Island | GBHE | - | 35 |
| Erie | Waterford Twp. | GBHE | - | 0 |
| Erie | Concord township/Welch Hill rd and rt 77 | GBHE | - | 3 |
| Erie | Juva | GBHE | - | 4 |
| Erie | SGL 101 | GBHE | - | 15 |
| Fayette | Lake Courage | GBHE | 0 | - |
| Greene | Rogersville | GBHE | 40 | 21 |
| Greene | Harry Farm, Ruff Creek Confluence | GBHE | 9 | - |
| Greene | Lazear Cemetery | GBHE | 0 | - |
| Greene | Ryerson Station State Park | GBHE | 0 | - |
| Greene | Delphene | GBHE | 0 | - |

Table 1. cont.

| County | Site Name | Species | 2013 Nests | 2012 Nests |
|-------------|--------------------------------------|---------|------------|------------|
| Greene | Falls Hollow | GBHE | 0 | - |
| Greene | Whitely Creek 2 | GBHE | 1 | - |
| Greene | Ryerson Station | GBHE | 0 | - |
| Huntingdon | Saddler Creek | GBHE | - | 17 |
| Indiana | Trusal Bridge | GBHE | 8 | - |
| Jefferson | Matson Camp | GBHE | - | 4 |
| Lackawanna | Atherton Pond | GBHE | 0 | - |
| Lancaster | Kinzers | BCNH | 0 | 5 |
| Lancaster | Island south of 372 and Piney Island | GBHE | - | 4 |
| Lancaster | Ephrata Community Hospital | BCNH | 50 | 83 |
| Lancaster | Chiques Creek | GBHE | 14 | 7 |
| Lancaster | Else Island/Safe harbor | GBHE | 11 | 7 |
| Lancaster | Piney Island | GBHE | 23 | 11 |
| Lancaster | Dead end road | GBHE | 19 | 14 |
| Lancaster | Middle Creek WMA | GBHE | 40 | 35 |
| Lawrence | Lakewood Neshannock Falls Rd | GBHE | - | 52 |
| Lebanon | Swatara Creek | GBHE | - | 1 |
| Lebanon | Gingrich and Prospect Rods | GBHE | - | 2 |
| Lebanon | Becks Creek | GBHE | 21 | 11 |
| Lebanon | Conewago Creek | GBHE | 27 | - |
| Luzerne | Frances Slocum State Park | GBHE | - | 0 |
| Luzerne | Bear Hollow | GBHE | - | 0 |
| Luzerne | East Fork Harveys Creek - North | GBHE | - | 0 |
| Luzerne | East Fork Harveys Creek Site - South | GBHE | - | 4 |
| Luzerne | Pittston | BCNH | 0 | - |
| Lycoming | Barbours | GBHE | 6 | - |
| Lycoming | Lycoming Creek | GBHE | 14 | - |
| McKean | Herzog | GBHE | 0 | - |
| McKean | Hutchins | GBHE | 0 | - |
| McKean | Crosby | GBHE | 0 | - |
| McKean | Irons Hollow | GBHE | 0 | - |
| Mercer | Barrows, Riley Road | GBHE | 292 | 276 |
| Mifflin | Unnamed colony | GBHE | 3 | - |
| Montgomery | Swamp Creek | GBHE | 55 | 55 |
| Montgomery | Towamencin Creek | GBHE | - | 8 |
| Montgomery | Towamencin Creek-2 | GBHE | 21 | - |
| Montgomery | Whitehall Road | GBHE | 17 | - |
| Northampton | Hollo Pines | GBHE | 20 | 12 |
| Northampton | Minsi Lake Vernal Pools/Bear Swamp | GBHE | - | 14 |
| Pike | Blooming Grove | GBHE | - | 0 |
| Potter | West Branch Dingman Run | GBHE | 0 | - |
| Schuylkill | Taylorville | GBHE | - | 0 |

Table 1. cont.

| County | Site Name | Species | 2013 Nests | 2012 Nests |
|--------------|-----------------------------------|---------|------------|------------|
| Somerset | SGL 82 | GBHE | 1 | - |
| Sullivan | Dutchman's Swamp | GBHE | - | 5 |
| Sullivan | Elkland; Covered Bridge rd | GBHE | 7 | 7 |
| Sullivan | Forksville | GBHE | 0 | - |
| Sullivan | Celestial Lake | GBHE | 0 | - |
| Susquehanna | Smokey Mountain | GBHE | - | 0 |
| Susquehanna | Doc Lutz Woods | GBHE | - | 9 |
| Susquehanna | High Bridge | GBHE | - | 0 |
| Susquehanna | Lenox , Lenox NE | GBHE | - | 0 |
| Tioga | Pine Creek | GBHE | 0 | - |
| Tioga | Route 49 , Lawrenceville | GBHE | 0 | - |
| Tioga | Shinglemill , Mills Creek Wetland | GBHE | 0 | - |
| Tioga | Pine Creek | GBHE | 0 | - |
| Tioga | Hogback | GBHE | 32 | 31 |
| Warren | Sill Run | GBHE | - | 0 |
| Warren | Akeley Swamp | GBHE | - | 0 |
| Washington | Murry Hill | GBHE | 55 | 56 |
| Washington | Unnamed colony | GBHE | 3 | - |
| Washington | Raccoon creek | GBHE | 54 | - |
| Washington | West Middletown , Dutch Fork | GBHE | 0 | - |
| Washington | Dutch Fork | GBHE | 54 | - |
| Washington | Somerset Township; Carlton Dr | GBHE | 13 | - |
| Wayne | West Damascus | GBHE | - | 0 |
| Wayne | Dyberry Creek | GBHE | - | 0 |
| Wayne | Tamarack Swamp | GBHE | - | 4 |
| Westmoreland | Little Sewickley Creek | GBHE | 1 | - |
| Westmoreland | Brush Creek | GBHE | 20 | - |
| Westmoreland | Millwood | GBHE | 2 | - |
| Westmoreland | Yukon (Lick Run) | GBHE | 19 | 20 |
| Westmoreland | Stony Run/Conemaugh River | GBHE | 44 | - |
| Wyoming | Mehoopany Creek | GBHE | 0 | - |
| Wyoming | New Mehoopany Creek Rookery | GBHE | 16 | - |
| Wyoming | Mehoopany | GBHE | 0 | - |
| Wyoming | Vernon | GBHE | 0 | - |
| Wyoming | Cider Run | GBHE | 0 | - |
| York | Kiwanis Lake | BCNH | X | 23 |
| York | Kiwanis Lake | GBHE | X | - |
| York | Kiwanis Lake | GREG | X | 8 |

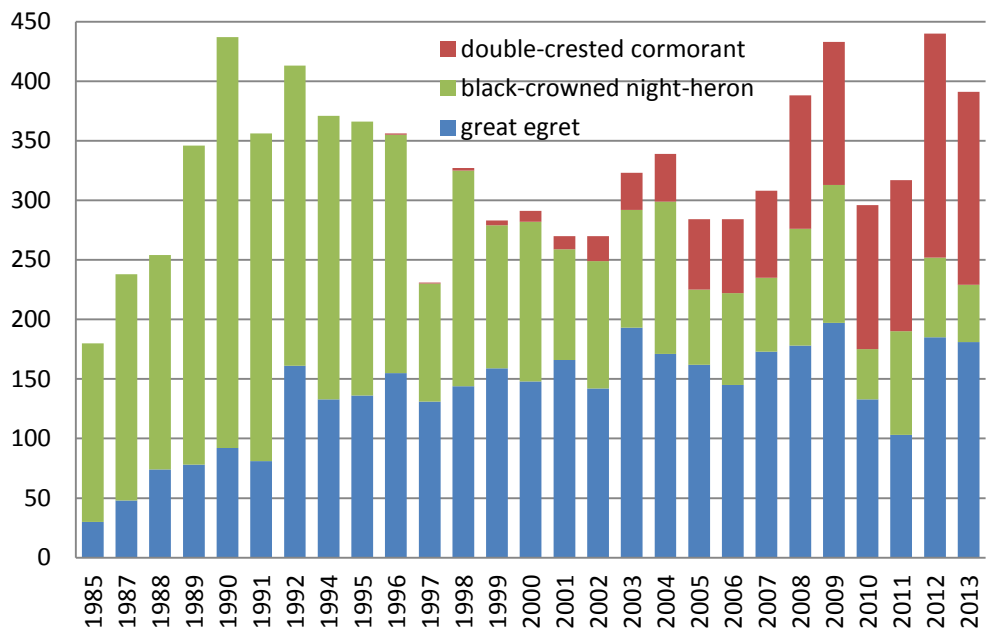


Figure 1. Colonial bird nests found on Wade Island, Dauphin County, PA, 1985-2013 by year and species.