

**NESTING AND NEST SITE CHARACTERISTICS OF  
BLACK-CROWNED NIGHT-HERONS (*NYCTICORAX NYCTICORAX*)  
AT SWAN LAKE, YAZOO NATIONAL WILDLIFE REFUGE,  
HOLLANDALE, MISSISSIPPI**

Mary P. Stevens  
5120 Reddoch Drive  
Jackson, MS 39211  
and  
Jerry L. Litton  
LightScribe Nature Photography  
Pelahatchie, MS 39145

Black-crowned Night-Herons (*Nycticorax nycticorax*) are considered a “species of greatest conservation need” under Mississippi’s Comprehensive Wildlife Conservation Strategy (Mississippi Department of Wildlife, Fisheries and Parks 2005). Black-crowned Night-Herons are widespread and common in North America (Palmer 1962), but very little is known about their nesting habits and habitats in Mississippi (Turcotte and Watts 1999). Black-crowned Night-Herons serve as indicators of environmental quality in wetland habitats because they are high on the food chain, accumulate contaminants, and have a wide geographic distribution (Custer et al. 1991, Davis 1993). Declines in many populations noted in the late 1960s were probably attributable to the use of DDT (Davis 1993).

Black-crowned Night-Herons are known to nest in eight heronries in Mississippi in Holmes, Issaquena, Tallahatchie, Warren, Washington and Yazoo counties (Mississippi Colonial Waterbird Count 1994-2006). Figure 1 is a photograph taken of a Black-crowned Night-Heron at the rookery in Yazoo County. The Washington County colony is located at Swan Lake, Yazoo National Wildlife Refuge, near Hollandale. Swan Lake is a 3,457-acre oxbow lake of the Mississippi River. The heron colony at Swan Lake is situated in a baldcypress-buttonbush swamp and is

protected from human disturbance and habitat destruction, two major causes of the species' declines in the late 1960's and early 1970's (Davis 1993). Since further research is needed to determine the breeding status of this species in Mississippi (Turcotte and Watts 1999), a study of nesting and nest site characteristics of Black-crowned Night-Herons was conducted at the Swan Lake heronry during the spring of 2000. This colony was first censused in 1995 for the Mississippi Colonial Waterbird Count. Twenty-five active Black-crowned Night-Heron nests were found in 1995; 15 nests for each of the years 1996, 1997 and 1998; 50 nests for each of the years 2000, 2001 and 2002; 26 nests for the year 2004; 30 nests for the year 2005; and 50 nests for the year 2006. The colony was not counted in 1999 and 2003. This paper presents additional information regarding nesting activity during the spring of 2000.



Figure 1. Photo taken at the heronry in Yazoo County on May 15, 2006 by Bill Stripling of Vicksburg, Mississippi

## **METHODS**

The study was conducted from March 11, 2000 to May 28, 2000. A total of eleven visits were made to the study site during this time period. Data collection was conducted from a canoe to facilitate quiet travel through the heronry, thereby reducing disturbance to nesting birds (Tremblay and Ellison 1979). An area of 0.85 acres was selected as the study site within a larger mixed-species heronry. Nests were considered active based on the presence of adults at the nest. Each nest monitored was marked with a numbered metal tag. After nests were marked, photographs were taken of nesting birds and their habitat. Each nest tree was identified to species. Tree height was estimated visually. We determined the height of each nest above the water level by establishing a baseline value at one of the nest sites on the first day of the study. All nest heights were measured in inches and keyed to the baseline value. The nest location relative to the tree trunk was recorded, and the nest orientation was taken with a compass. The number of nests per tree and nesting associates for each tree were documented. The number of eggs and young per nest were recorded with the aid of a telescoping mirror used to view the contents of the nest. The number of eggs lost from intact nests by predation or unknown causes was recorded. The date that eggs, incubation and young were first observed was documented.

## **RESULTS**

We located 40 active nests (including some re-nesting attempts), all of which were built in baldcypress. Tree heights ranged from 5-110 feet and most nests were situated slightly over three feet above water level (37.95 inches, range 12-65 inches). Almost all of the nests (38 of 40) were adjacent to the tree trunk, and most that were measured (15 of 25) were facing in a southerly direction (Table 1). All except one of the nests were built in live trees.

Eggs and incubation were first observed on March 25 and young were first seen on April 9. There were usually 3 to 4 nests of Black-crowned Night-Herons and nesting associates per tree. Great Egrets were the most common nesting associate. Of the 33 nest trees surveyed, 31 had Great Egrets nesting in association with Black-crowned Night-Herons, one had Great Egrets, Black-crowned Night-Herons, and Cattle Egrets, and one had only Black-crowned Night-Herons. Seven trees had more than one pair of nesting Black-crowned Night-Herons.

Fifteen of the 40 nests documented in the study area were lost to catastrophic events such as high water or wind. Two nests lost their tags and their disposition could not be determined. The remaining 23 nests lost on average 1.17 eggs per nest due to predation or from uncertain causes. Six of these nests, however, retained complete egg sets throughout incubation and produced a complete set of young. One nest lost the entire clutch (three eggs). These 23 nests hatched an average of 2.35 young per nest (range 0-3).

**Table 1.** Nest Orientation Determined by Compass

Southeast	Southwest	South	North	Northwest	West	East
3 nests	5 nests	7 nests	2 nests	2 nests	2 nests	4 nests

## DISCUSSION

Black-crowned Night-Herons breed on every continent except Australia and Antarctica. As might be expected of a widely distributed species, these birds are flexible in their selection of breeding sites, “[s]o varied as to be difficult to describe – fresh, brackish, and salt-water situations appear equally suitable” (Palmer 1962). Based on the published literature (e.g., Palmer 1962, Jenni 1969, Burger 1978, Wiese 1978, Beaver et al 1980 and Davis 1993), Black-crowned Night-Herons choose locally suitable vegetation for nesting sites. They nest in an enormous

variety of habitat types in mixed species colonies generally over water, and choose nest sites from 2 to 160 feet in height, with relatively small clutch sizes (2-3 eggs). Site selection in Black-crowned Night-Herons may suggest predator avoidance (Davis 1993).

In Mississippi, we found that Black-crowned Night-Herons nest in mixed species colonies over water in secluded wooded swamps, which also suggests that site selection may relate to predator avoidance (Mississippi Colonial Waterbird Count 1995-2006). The colony we studied in Mississippi was a mixed species colony located in a secluded wooded swamp over water. The nests were constructed at heights of 12-65 inches above water and clutch size was relatively small averaging 3 eggs per nest. One nest, however, had a clutch of seven eggs, which is almost double the average clutch size as reported in the literature (Davis 1993). One other clutch size mentioned in the literature also had a clutch of seven eggs (Henny 1972).

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