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CURRENT STATUS OF COLONIAL NESTING WATERBIRDS IN KENTUCKY

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ABSTRACT

Of nine species of colonial nesting waterbirds documented as breeding historically in Kentucky, six currently nest in the state. In addition, *Bubulcus ibis* and *Egretta caerulea*, formerly not known to nest in Kentucky, have become established as rare but regular summer residents in the past decade. Seven current nesting species are listed by the Kentucky State Nature Preserves Commission (KSNPC) as Endangered, Threatened, or Special Concern, and *Sterna antillarum athalassos* is listed federally. *Anhinga anhinga, Phalacrocorax auritus*, and *Chlidonias niger* are regarded as extirpated. Colonial nesting waterbird numbers have fluctuated since the time of settlement. Use of plume feathers in the millinery trade, bottomland forest clearing and wetland draining, and the accumulation of DDT residues have all caused declines. The banning of DDT and the creation of large reservoirs have apparently resulted in population increases and range expansion of some species. Cooperative rookery surveys have been conducted since 1985, yielding concise information on abundance of most species. A brief synopsis of the occurrence of each species in Kentucky is given, including comparisons of historical and currently known abundance and distribution.

INTRODUCTION

While often considered to be denizens primarily of coastal regions, colonial nesting waterbirds also use inland aquatic resources. Most colonial nesting waterbirds found in Kentucky are wading birds, including seven species of herons and egrets (*Ardea herodias, Bubulcus ibis, Butorides striatus, Casmerodius albus, Egretta caerulea, Nycticorax nycticorax*, and *Nyctanassa violacea*), but other members of this diverse group include the diving, fish-eating *Anhinga anhinga* and *Phalacrocorax auritus*, and the terns *Chlidonias niger* and *Sterna antillarum athalassos*. Most are generally found in association with major inland lakes and rivers.

Of nine species of colonial nesting waterbirds documented as breeding historically in Kentucky (Mengel 1965), six are extant in the state (Table 1). In addition, two species formerly not known to nest in Kentucky, *B. ibis* and *E. caerulea*, have established themselves in the past decade as rare, but regular, summer residents (Monroe et al. 1988). Of these eight extant species, five are listed by the Kentucky State Nature Preserves Commission (KSNPC) as Endangered, Threatened, or Special Concern (KSNPC 1991). Only one, *S. a. athalassos*, is listed federally (United States Fish and Wildlife Service 1990). *Anhinga anhinga, C. niger,* and *P. auritus* are regarded as extirpated (KSNPC 1991).

State Distribution

As is the case throughout much of the southeastern United States, colonial nesting waterbirds are rather locally distributed in Kentucky. Most nesting records are from the western third of the state, where large river floodplains offer an abundance of aquatic habitats. Only one, *B. striatus*, is known to nest statewide. The creation of large reservoirs in central and eastern Kentucky has had an impact on some colonial nesting waterbirds, all of which will use reservoirs for foraging. A few species (e.g., *A. herodias, E. caerulea*, and *N. nycticorax)* have expanded their nesting ranges in recent years, probably at least in part in response to the presence of this newly available habitat.

Historical Perspective

Populations of colonial nesting waterbirds in Kentucky have apparently fluctuated widely since the first documentary information was obtained by early explorers (Mengel 1965). In pre-settlement times, a

Table 1. Protection categories and historical and breeding status of colonial nesting waterbirds in Kentucky

Species	Protection categories		Breeding status in KY	
	KSNPC[1]	Federal[2]	Historical[3]	Current
Anhinga anhinga Anhinga	Extirpated	–	Yes	No
Ardea herodias Great Blue Heron	Special concern	–	Yes	Yes
Bubulcus ibis Cattle Egret	Special concern	–	No	Yes
Butorides striatus Green-backed Heron	–	–	Yes	Yes
Casmerodius albus Great Egret	Endangered	–	Yes	Yes
Chlidonias niger Black Tern	Extirpated	–	Yes	No
Egretta caerulea Little Blue Heron	Endangered	–	No	Yes
Nycticorax nycticorax Black-crowned Night-Heron	Endangered	–	Yes	Yes
Nyctanassa violacea Yellow-crowned Night-Heron	Threatened	–	Yes	Yes
Phalacrocorax auritus Double-crested Cormorant	Extirpated	–	Yes	No
Sterna antillarum athalassos Interior Least Tern	Endangered	Endangered	Yes	Yes

Key:
[1]Kentucky State Nature Preserves Commission, (1981).
[2]As listed by the United States Fish and Wildlife Service (1990).
[3]As described by Mengel (1965).

great diversity and abundance of wetland habitats were present in the pristine floodplains of major inland rivers. These habitats provided a wealth of aquatic resources for waterbirds. Although much of the early post-settlement avifauna was never documented, regional accounts (e.g., Nelson 1877, Langdon 1879, Butler 1897) suggest that most species were well distributed in appropriate habitat.

The millinery trade was largely responsible for the dramatic decline and near extinction of several species of wading birds (e.g., *C. albus, Egretta thula, Egretta rufescens*) during the latter half of the 19th century (Terres 1980). Large numbers of herons and egrets were slaughtered throughout much of eastern North America so their breeding plumes could be used to adorn women's hats. Many populations rebounded significantly after protection measures were instigated in the early 1900s. It is unclear to what extent Kentucky populations were affected by this abuse, but regional accounts document a significant decrease in some species (Mengel 1965).

Another general decline commenced during the mid-1900s when the clearing of bottomland forests and draining of wetlands accelerated. Many thousands of acres of floodplain wetlands were drained for agricultural purposes. The loss of prime foraging habitat probably resulted in population declines of at least some species of wading birds in Kentucky, although documentation is lacking.

The accumulation of pesticide residues (especially DDT) accelerated the decline of many waterbirds during the 1950s and early 1960s. Pesticides caused thinning of eggshells and resulted in reduced reproduction by many species (Terres 1980). Declines of inland populations of colonial nesting waterbirds during this period were not well-documented, especially in Kentucky where a hiatus of some 20 years appeared in the state's ornithological literature pertaining to them. Fortunately, DDT and other harmful polychlorinated biphenyl pesticides were banned in the early 1970s (Terres 1980). Probably in large part because of this action, most colonial nesting waterbird populations have subsequently rebounded dramatically.

Since 1984, all of the state's active rookeries have been surveyed at least biennially. Evans (1984) summarized the status of heron rookeries in 1984, and the KSNPC and Kentucky Department of Fish and Wildlife Resources (KDFWR) have since cooperated in rookery surveys. Since 1985, the Kentucky Breeding Bird Atlas project has been conducted cooperatively by KDFWR, KSNPC, and the Kentucky Ornithological Society. That project has yielded new information on most colonial nesting waterbirds, including several new rookeries.

Other agencies and organizations have also contributed to this effort. The Tennessee Valley Authority censused some western Kentucky rookeries during the 1980s (Pullin 1983, 1984, 1985, 1986, 1987). Since the listing of *S. a. athalassos* as federally endangered, the Missouri Department of Conservation has conducted several years of research on the Mississippi River nesting population (Rochelle Renken, pers. comm.). Personnel with the Kentucky Chapter of The Nature Conservancy have recently discovered two *A. herodias* rookeries in western Kentucky (James Aldrich, pers. comm.). As a result of all this recent field work we now have, perhaps for the first time, a fairly clear picture of the abundance and distribution of Kentucky's colonial nesting waterbirds.

SPECIES ACCOUNTS

The following accounts summarize historical and current knowledge of the abundance and distribution of 11 species of colonial nesting waterbirds in Kentucky. Each account gives a brief history of the species in the state, notes on historical and extant nesting colonies, an estimate of historical and present-day numbers, and other pertinent notes on abundance and/or distribution. Early historical information on colonial nesting waterbirds is poor, and our knowledge of their former status is therefore often unclear, thus making comparisons of current and historical status highly speculative.

***Anhinga anhinga* (Anhinga).** As recently as 1950, *A. anhinga* nested at one rookery in western Fulton County (now a part of Reelfoot National Wildlife Refuge). This colony was traditionally referred to as "Kentucky Cranetown" and was composed primarily of *A. herodias* and *C. albus*. Mengel (1965) recorded approximately 25 pairs of *A. anhinga* at this rookery in May 1949. Observations the following year by Goodpaster et al. (Mengel 1965) were the last reported nesting records of *A. anhinga* for Kentucky Cranetown. For many years it was thought that this rookery had been destroyed by forest clearing after 1950, but recent inspection of aerial photographs made in April 1950 clearly show a substantial rookery where mature swamp forest still stands. The factor(s) responsible for the rookery's demise remain unclear, but DDT may have played a major role.

More recently, a large *A. herodias* rookery on Reelfoot Lake in Tennessee (formerly referred to as "Big Cranetown," and located less than 15 km from Kentucky Cranetown) has expanded dramatically after nearly disappearing in the 1960s (Michael Bierly, pers. comm.). During the mid-1980s *A. anhinga* returned to nest in this rookery in small numbers, after a hiatus of many years. Although numbers have not increased significantly, *A. anhinga* apparently continues to nest there. Since *A. anhinga* is almost exclusively found nesting within large *A. herodias* rookeries in the Mississippi Valley (Mengel 1965), it can be assumed that *A. herodias* must reestablish a rookery in the former location of Kentucky Cranetown or somewhere nearby before *A. anhinga* will nest in Kentucky again.

***Ardea herodias* (Great Blue Heron).** Over the past century this large heron has exhibited the greatest fluctuation in numbers of any wading bird in Kentucky. Based on information summarized by Mengel (1965), prior to 1950 there were slightly more than 900 pairs of *A. herodias* nesting at eight distinct rookeries in western Kentucky. By contrast, rookery census efforts undertaken in the late 1980s and early 1990s have documented the occurrence of more than 1300 breeding pairs in no fewer than 16 rookeries in 12 counties (Ballard, Calloway, Carlisle, Crittenden, Fulton, Hickman, Livingston, Marshall, Muhlenberg, Ohio, Union, and Webster). Comparisons of data from these two periods are deceiving in that they fail to reveal that *A. herodias* apparently nearly or completely disappeared from the state as a nesting bird during the interim; for example, rookeries have only recently been rediscovered at two historical sites (Blood River, Calloway County; Murphy's Pond, Hickman County) where nesting did not occur for many of the intervening years. Just 10 years ago, several of the state's larger extant rookeries were not known (e.g., Bear Creek, Malcolm Creek, Cypress Creek, Marshall County). Reasons for the recent increase in *A. herodias* nesting in Kentucky are not fully understood, but the banning of DDT and the acceptance of reservoirs by *A. herodias* for nesting and foraging may be largely responsible.

***Bubulcus ibis* (Cattle Egret).** Subsequent to an apparently natural dispersal across the Atlantic Ocean from Africa sometime in the late 1800s, this small egret has colonized most of South and Central America, and more recently the southeastern United States (Terres 1980). *Bubulcus ibis* was first observed in Kentucky in 1960 in Warren County (Wilson 1960). Throughout the 1960s and early 1970s *B. ibis* remained casual in occurrence, but during the late 1970s and early

1980s it gradually was observed more regularly. In 1981 a few pairs nested with *N. nycticorax* on Lake Barkley, Trigg County (Thomas 1982). Small numbers continued to nest at this location for a few years, but they did not move with the rookery when it relocated approximately 20 km to the north on Lake Barkley in the late 1980s. Since at least 1984, small numbers of *B. ibis* have nested with *N. nycticorax* on Shippingport Island at Louisville (Palmer-Ball and Evans 1986).

Since the mid-1980s the *B. ibis* population seems to have stabilized in Kentucky. Large numbers nest across the Mississippi River at two mixed- species colonies in southeastern Missouri, and are regularly seen feeding in western Ballard and Carlisle counties.

Although *B. ibis* tends to nest with other species of wading birds, homogenous nesting colonies are sometimes observed (Harrison 1975). Such an event occurred in 1984, when approximately 75 pairs nested in a *Salix* sp. (willow) forest on a sandbar along the Mississippi River in Fulton County (Stamm 1984). Rookeries may be transitory in nature, as this one was. Apparently, when selecting a rookery site, the birds respond to a variety of factors, such as the presence of successional trees for nesting, the accessibility of suitable feeding areas, and the presence of rookeries of other wading bird species.

***Butorides striatus* (Green-backed Heron).** This small heron is distributed throughout most of Kentucky, although it occurs rather locally throughout the Cumberland Plateau and Mountains (Monroe et al. 1988). *Butorides striatus* does not often nest colonially, usually being found as one or a few pairs associated in fairly close proximity (Harrison 1975). However, *B. striatus* sometimes nests in or near rookeries of *N. nycticorax* or other mixed wading bird colonies. After six years, the Kentucky Breeding Bird Atlas project has data from 298 survey blocks in at least 89 counties across the state, with 29 confirmed nesting records of this species; both current distribution and abundance appear to agree generally with those reported by Mengel (1965).

Butorides striatus apparently has adapted well to human alteration of the landscape. Aquatic habitats used for foraging include farm ponds, lake shores, streams, and other natural bodies of water (Monroe et al. 1988). A variety of successional habitats, including thickets of young saplings and second-growth woodlots far from water, are used for nesting.

***Casmerodius albus* (Great Egret).** Throughout much of its range *C. albus* was decimated by the millinery trade in plume feathers in the late 1800s (Terres 1980), though the extent to which Kentucky populations were affected is unknown. Mengel (1965) reported *C. albus* nesting in five rookeries in Ballard, Carlisle, Fulton, Henderson, and Hickman counties, with the earliest reports from the 1930s. Large numbers were reported only at Kentucky Cranetown, Fulton County, where Mengel observed approximately 200 pairs in 1949. *Casmerodius albus* apparently disappeared from Kentucky as a nesting bird for at least 20 years during the DDT era. Not until 1986 was *C. albus* rediscovered nesting in Kentucky, when at least two nests were observed at the *A. herodias* rookery at Axe Lake, Ballard County (Stamm 1986). Small numbers of *C. albus* continue to nest there. In addition, a single nest with large young was discovered in a *N. nycticorax* rookery on Lake Barkley in 1989 (Stamm 1989).

Casmerodius albus has not responded as favorably to the creation of large reservoirs in western Kentucky as have *A. herodias* and *N. nycticorax*; apparently *C. albus* finds natural floodplain wetlands more suitable for foraging. Populations of *Casmerodius albus* continue to grow in southern states, and if this trend persists larger numbers will probably return to Kentucky.

***Chlidonias niger* (Black Tern).** Audubon (1835) reported that *C. niger* nested at Louisville during the early 1800s; he apparently found more than 70 nests there on one occasion. Since then, the only evidence of nesting has come from southern Warren County (Monroe et al. 1988), where Wilson (1929) reported seeing several individuals and identified a *C. niger* egg on 22 June 1927. The loss of suitable open marsh nesting habitat probably precludes the possibility of future nesting.

***Egretta caerulea* (Little Blue Heron).** Although Mengel (1965) cited historical (1800s) nesting records from near Kentucky and predicted future nesting in western Kentucky, *E. caerulea* was regarded as a nonbreeding summer visitant through the 1970s (Monroe et al. 1988). In 1981 a few pairs were discovered nesting with *N. nycticorax* on an island in the southern part of Lake Barkley, Trigg County (Thomas 1982). *Egretta caerulea* remained in the colony for only two more years and then disappeared for unknown reasons. In August 1989 a few *E. caerulea* were noted at a new *N. nycticorax* rookery on Lake Barkley, but nesting of *E. caerulea* there has not been confirmed. In 1985 a pair successfully nested with *N. nycticorax* at Shippingport Island on the Ohio River near Louisville (Palmer-Ball and Evans 1986), and a pair has been observed there on numerous occasions since 1985, although nesting has not been confirmed in several years.

Large numbers of *E. caerulea* are present in mixed waterbird rookeries in southeastern Missouri (John Smith, pers. comm.). Many of these birds forage in Kentucky counties bordering the Mississippi and lower Ohio rivers, but the Jefferson and Trigg County sites remain the only ones documented for nesting in the state.

***Nycticorax nycticorax* (Black-crowned Night-Heron).** Mengel (1965) listed three known *N. nycticorax* rookeries as of the late 1950s: two in the vicinity of Louisville (Jefferson County) and one near Paris (Bourbon County). The latter site has apparently been abandoned for many years, but a small rookery (approximately 25 pairs) observed near Winchester (Clark County), in 1985-86 (Stamm 1986) may have been colonized by descendants of the historical Bourbon County population. Unfortunately the Clark County rookery was disturbed by landowners in 1987, and the birds have moved to an unknown location.

The Louisville area *N. nycticorax* population has remained fairly stable through the years, even though the nesting colony has been located at no fewer than four distinct sites (Palmer-Ball and Evans 1986). Currently the rookery involves more than 300 nesting pairs and is afforded fairly good protection on Shippingport Island, a restricted area owned by the United States Army Corps of Engineers.

During the late 1970s a rookery became established on southern Lake Barkley in Trigg County (Thomas 1982). For unknown reasons the herons abandoned this site sometime in the late 1980s and relocated approximately 20 km north on the same lake. The nesting population continues to hover around 100-150 pairs. Based on the acceptance of reservoirs by this adaptable species, it appears that great potential exists for *N. nycticorax* to expand into other portions of Kentucky.

***Nyctanassa violacea* (Yellow-crowned Night-Heron).** Although this relatively secretive heron rarely nests in large colonies away from coastal regions, occasionally 3-5 or more nests are associated in loose colonies (Harrison 1975). While favoring floodplain swamps and sloughs, *N. violacea* is also found on ponds, streams, and protected

portions of reservoirs (Mengel 1965, Monroe et al. 1988). Historically, there is very little evidence of confirmed nesting (Mengel 1965). There are historical (pre-1960) nesting records for three counties in central Kentucky and breeding season records from eight other western Kentucky counties. Because *N. violacea* usually nests in single or a few scattered pairs, confirmation of nesting is quite difficult. Summer sightings of adults or recently-fledged juveniles can indicate nesting in the immediate vicinity. A compilation of data from the Kentucky Breeding Bird Atlas and other field inventory projects suggest *N. violacea* probably nests at no fewer than 20 sites in 17 counties (Ballard, Boyle, Bullitt, Calloway, Carlisle, Fayette, Fulton, Graves, Grayson, Greenup, Hickman, Hopkins, Jefferson, McCracken, Muhlenberg, Oldham, and Union). Because small numbers are locally distributed throughout central and western Kentucky, the potential for the discovery of additional nesting localities is great.

***Phalacrocorax auritus* (Double-crested Cormorant).** The occurrence of this fish-eating diver as a nesting bird is not well documented. Mengel (1965) reported nesting in three mixed waterbird rookeries in Ballard, Fulton, and Henderson counties, citing references from the mid-1930s to the early 1950s, but only Kentucky Cranetown in Fulton County harbored a substantial number of nesting birds (approximately 50 pairs in 1949). *Phalacrocorax auritus* then disappeared from these rookeries and became dramatically less frequent as a transient (Monroe et al. 1988). This decline may have been caused in part by the accumulation of DDT residues. Since the late 1970s this trend has reversed, and spring and fall transient *P. auritus* numbers have increased dramatically as formerly-inhabited Great Lakes rookeries have become reestablished (Bruce Peterjohn, pers. comm.). Although currently regarded as extirpated as a breeding bird in Kentucky (Monroe et al. 1988), *P. auritus* will probably return to nest in rookeries of western Kentucky if its regional recovery continues.

***Sterna antillarum athalassos* (Interior Least Tern).** Mengel (1965) reported Kentucky's first nesting record of this species for Kentucky from Kentucky Bend (Fulton County) in 1937. At the time of Mengel's work the only other known nesting locality in Kentucky was on Bell Island in the Ohio River (Union County). It seems likely that other terneries were present then, but difficulty in accessing them was probably responsible for the paucity of documented records. An extralimital nesting from the Falls of the Ohio at Louisville was recorded in 1967 (Stamm 1968).

Following federal listing of the inland race (*S. a. athalassos*, or Interior Least Tern) as endangered, field investigation has focused on nesting populations of the Mississippi River Valley. As a result the abundance and distribution of *S. a. athalassos* in Kentucky is well-known. The number of distinct nesting sites varies yearly depending on river levels, but during most years three major terneries occur, one in each of Carlisle, Hickman, and Fulton counties (Rochelle Renken, pers. comm.). Generally 150-250 nesting pairs are present. At least two areas used in the mid-1980s in Fulton County have been abandoned, apparently in favor of the sites noted above. Also, a few birds are regularly reported on the lower Ohio River at Lock and Dam 53 (Ballard County), near the mouth of the Tennessee River (McCracken/Livingston counties), and below Smithland Dam (Livingston County), but successful nesting has not been confirmed at any of those sites.

Inundation of nesting habitat as a result of the construction of high–lift dams is apparently responsible for the extirpation of nesting populations on the Ohio River above Smithland Dam. Human disturbance and *Canis latrans* (coyote) predation appear to be the greatest threats to populations on the Mississippi and lower Ohio rivers.

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