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History, Distribution, and Reproduction by the Swallow-tailed Kite (Elanoides forficatus) in Arkansas

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Cover Page Footnote

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History, Distribution, and Reproduction by the Swallow-tailed Kite (*Elanoides forficatus*) in Arkansas

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Running Title: Swallow-tailed Kite in Arkansas

Abstract

The Swallow-tailed Kite (*Elanoides forficatus*) is a rare bird in Arkansas, and its historical populations are believed to have declined over much of the last century due to loss of bottomland hardwood forests and associated wetlands. However, sightings have increased in the recent 2 decades. By use of online sources for citizen science, we elucidate the current distribution of this bird in Arkansas, and comment on the status of reproduction. Swallow-tailed Kites arrive in Arkansas as early as March and remain to mid-September, but numbers of reported sightings have a bimodal occurrence with peaks in May and August.

Introduction

The Swallow-tailed Kite (*Elanoides forficatus*) is a monomorphic (sexes do not differ in appearance) raptor with black and white markings that present a striking contrast. The head, neck, underside, axillaries, and anterior part of the underwing are white, whereas the back, upperwing coverts, and all rectrices and remiges are black. The bird is named for the obvious character of a very long and deeply forked tail, which is used in very graceful movement in the air and which distinguish it from other kites even in silhouette (Meyer 2020).

The original breeding range for the Swallow-tailed Kite included most of the southeastern United States and extended up the Mississippi River toward the Great Lakes. However, by 1940 the breeding range appeared to have been restricted to southeastern Atlantic and Gulf Coastal states (Meyer 2020).

Due to lack of recent sightings, Howell (1911) believed that the Swallow-tailed Kite was extremely rare or no longer occurred in Arkansas by 1910, though he documented that it had bred in Newport (Jackson Co.) in 1884 and in Little River Co. in 1890. Along the Arkansas River drainage into Oklahoma, the bird was considered to have been abundant, yet had disappeared from Oklahoma by 1910 (Nice 1931).

Smith (1915) reported a record from Winslow (Washington Co.), which accounted a Swallow-tailed Kite seen on 8 October 1913 by a farmer. Black (1935) noted that there had been no further record in the Winslow area, but commented that the bird apparently was once common there as a transient. Baerg (1931) also did not add any new records, but 20 years later reported observations from Newport in 1935 and on 10 July 1949, when pairs were seen and believed to be nesting (Baerg 1951).

Howell (1911) and Baerg (1931) regarded the former population of Swallow-tailed Kites in Arkansas to have been numerous, nesting in the cypress swamps in the lowlands of Arkansas. At the time of early exploration of the deltaic region (Mississippi Alluvial Plain) of eastern Arkansas by Europeans, “the skies were filled with” a variety of bird species, including Passenger Pigeons, Whooping Cranes, Carolina Parakeets, Ivory-billed Woodpeckers, and Swallow-tailed Kites (Grimmett 1989). However, James and Neal (1986) wrote that this bird had not been recorded in the state since the 1940s because there were no reports in the Audubon Society files (and the 1935 and 1949 reports by Baerg (1951) were from second hand accounts).

The status of Swallow-tailed Kites in Arkansas after about 1900 is unclear and James and Neal (1986) reported no records since the 1940s and no reports in Audubon Society files. Before about 1910, regular breeding by Swallow-tailed Kites in eastern Texas was observed in coastal prairies and timbered watersheds (Brown *et al*. 1997). However, the species had completely disappeared by the mid-1910s. This decline in population was the result of human interference causing destruction of feeding grounds and nesting sites (Brown *et al.* 1997).

The most recent summary of information regarding the Swallow-tailed Kite in Arkansas was compiled by Chiavacci *et al*. (2011). At that time, this bird had become a frequent visitor of the Dale Bumpers White

River National Wildlife Refuge (NWR), though sightings of the Swallow-tailed Kite were still considered to be rare. Evidence of nesting attempts was seen in the presence of constructed nests, nest-building and incubation behavior, and the documented presence of nestlings in 2005 and 2008. However, no attempts at nesting were successful. The birds had been observed in forested wetlands consisting heavily of various oak trees.

With the increasing use of citizen science web sites, data regarding current distribution, habitat, and reproduction of many species of birds are growing, with more sightings being reported in recent years. Our objectives were to compile current information to look for patterns of distribution, arrival, and departure of the birds from Arkansas on a monthly basis, as well as over the years. Further, we consolidate information to date about this bird in Arkansas.

Methods and Materials

To determine distribution and dates of migration, we compiled records verified by the Arkansas Audubon Society and published on their website (http://www.arbirds.org/aas_dbase.html), the citizen science website hosted by the Cornell Lab of Ornithology (https://ebird.org/explore), and reports on the discussion list ARBIRD-L (ARBIRD-L@listserv.uark.edu) hosted at the University of Arkansas. These sources included not only records of sightings, but comments describing associated birds, prey, and appearance. Many records are duplicated on those sites, but use of all sources allowed us to reduce chances of missing important data.

We sorted our spreadsheet of data to determine the locations and timing of presence of the birds in Arkansas, and made maps of distribution. Because multiple observers often independently report their sightings, we filtered the data by eliminating redundant reports for birds seen within an 8 km (5 mi.) radius and within 5 days of each other. We did not eliminate those reports in which presence of the bird extended over more than 5 days, or when the species was seen at the same location but in different years.

Results and Discussion

Distribution - The first recent observation (since the 1940s) of a Swallow-tailed Kite in Arkansas was in Calhoun Co. on 7 April 1986. The earliest reported date of observation in Arkansas was in southeast Arkansas (Drew Co.) on 25 March 2020. Records of the birds across appropriate habitats in Arkansas continue through the spring and summer, with the last bird sighting reported on 16 September (these kites usually migrate southward from the US by mid-September (Meyer 2020).

The birds tend to become summer residents in bottomland and marshland habitats near river systems (Arkansas, Sulphur, and White) and their tributaries. Reported locations, including rare observations, are included in Fig. 1. As these records were compiled from "citizen science," we note that the data do not represent a systematic survey, and that kites may go undetected in less accessible habitats.

Most sightings record only 1-2 individuals, but high-quality bottomland or wetland habitats are revisited often by the birds, e.g.: Arkansas County at Dale Bumpers White River NWR and Miller County at Sulphur River Wildlife Management Area (WMA). The most birds observed at one time were in Miller Co., Sulphur River WMA, on 11 July 2020, where 8 birds (including 4 adults, 1 second year bird, and 3 fledglings) were reported. Due to likelihood of seeing these birds, these sites are visited often by enthusiastic birders wishing to see this rare species in Arkansas, resulting in more numerous reports.

Examination of historical distribution shows the longest term of continued occurrence in the east central region of Arkansas (Fig. 2). From 1986-1991, the species was recorded only in Calhoun and Van Buren Cos. From 1992-1996, the bird was reported in Pike and Scott Cos., then from 1997-2001 sightings expanded

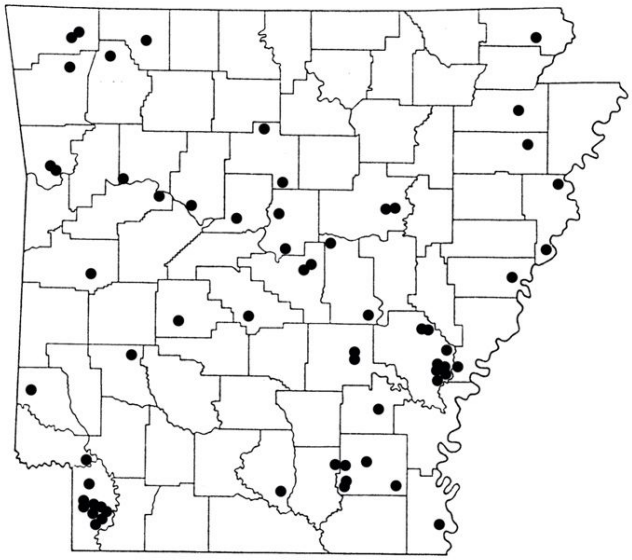

Figure 1. Distribution of Swallow-tailed Kites (*Elanoides forficatus*) in Arkansas based on literature and records compiled in arbirds.org and ebird.org. Dots indicate locations of observation.

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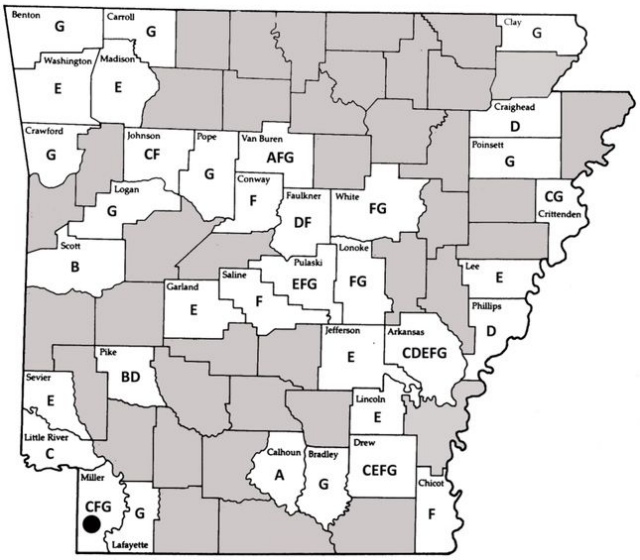

Figure 2. Historical distribution of Swallow-tailed Kites in Arkansas. Unshaded counties have records, and lettering represents time frames for the records: A = 1986-1991, B = 1992-1996, C = 1997-2001, D = 2002-2006, E = 2007-2011, F = 2012-2016, and G = 2017-2020. Dot indicates the county in which successful nesting has been observed.

into Arkansas, Crittenden, Drew, Johnson, Little River, and Miller Cos.

Sightings of the Swallow-tailed Kite were reported in 5 counties from 2002-2006 including the addition of Craighead, Faulkner, Phillips, and Pike Cos. Interest in reporting increased after 2010. Between 2007-2011 observations were reported from 10 cos., with new records from Garland, Lee, Lincoln, Madison, Pulaski, Sevier, and Washington Cos. Reports of the Swallow-tailed Kite continued to increase from 2012-2016 with reports from 12 counties including the addition of Chicot, Conway, Lonoke, Saline, and White Cos.

From 2017-2020, sightings were reported from 17 counties. Of those, first time reports came from Benton, Bradley, Carroll, Clay, Crawford, Lafayette, Logan, Poinsett, and Pope Cos. To date, Swallow-tailed Kites have been recorded in 35 counties.

Sightings of Swallow-tailed Kites in Arkansas begin in March and end in September. However, the distribution of sightings is bimodal (Fig. 3). Birds seen in April and May include transients but also birds that attempt nesting (Chiavacci *et al*. 2011; Zellers 2020a, b). The August peak in observations also likely is augmented by birds wandering from other areas during the post-breeding period (Meyer 2020). The number of counties in which sightings have been reported also peaks in August (Fig. 4). Interestingly, of the 35 counties with reported sightings, 20 only had sightings

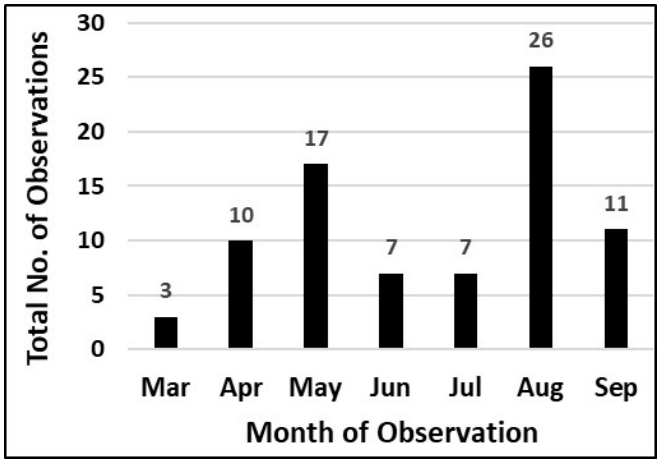

Figure 3. Monthly chronological frequency of reported observations of Swallow-tailed Kites in Arkansas, 1986-2020 (with likely redundant reports of the same birds removed). Months not listed had no reported observations.

during the expected southern migration period of August to September. In Florida, a similar bimodal occurrence of sightings seems to be associated with increased foraging activity after eggs hatch, followed by a second peak associated with independence of young and gathering of birds in group foraging areas prior to southern migration. Further, migrations of tracked birds in GA, SC, and FL tended to be somewhat N-S, with no migrating birds wandering more westward (Ken Meyer, *pers. comm*.).

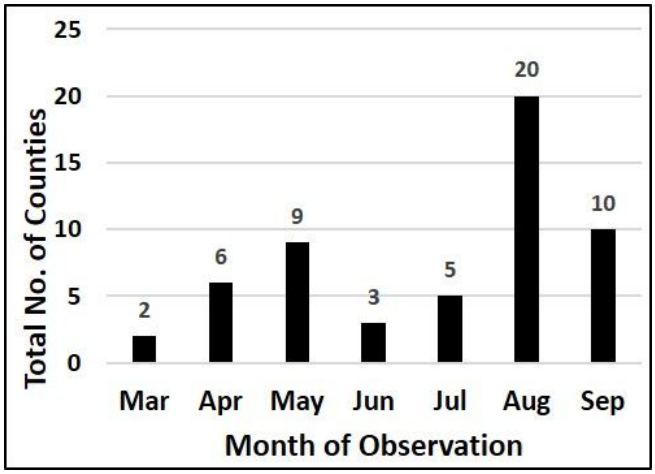

Figure 4. Total number of counties in Arkansas from which reports of Swallow-tailed Kites originated, stratified by month. Birds attempting to nest were found in the same county across multiple months, and some counties had multiple-month sightings without reports of nesting, but reports occurred only in August and September from 20 of the 35 counties with reported records. Data from 1986-2020, with likely redundant reports of the same birds removed. Months not listed had no reported observations.

Citizen reports of the Swallow-tailed Kite often coincide with sightings of its closest relative in Arkansas, the Mississippi Kite (*Ictinia mississippiensis*). Arkansas Swallow-tailed Kites have been reported foraging with flocks of 4-25 Mississippi Kites. Of 11 reports of mixed flocks, 3 were in April-May, and 8 in July-Sept, which may indicate appearance in group migrations because none were found in June and most were in August. Other flock associates included up to 28 Common Nighthawks (*Chordeiles minor*) and a group of Turkey Vultures (*Cathartes aura*) and Black Vultures (*Coragyps atratus*).

Nesting - Observations of nesting by Swallow-tailed Kites in Arkansas were documented in the late 1800s, and might have occurred rarely until the 1940s, but not since then (Baerg 1951; James and Neal 1986). In 1998, a pair was observed during the breeding season in White River NWR (Chiavacci *et al*. 2011). Their study of potential nesting in White River NWR, conducted from 2001-2009, detected 5 nests. However, none was able to produce fledglings. Interpreted failure of nests appeared to be due to abandonment by the nesting pair, young kites being killed likely by either a hawk or owl, and eggs in 1 nest probably preyed upon by a snake (Chiavacci *et al*. 2011). The young kites killed by another raptor were estimated to be about 2 weeks old, indicating that nesting success was possible.

Chiavacci *et al*. (2009, 2011) reported attempted nesting in White River NWR beginning in 2002. Although a few other details of nesting have been reported in Arkansas (constructed nests, birds performing nest building behavior), the best documentation of nesting would be the identification of nests with eggs or developing young, such as has been reported in White River NWR. Sighting of a mature kite feeding fledglings in July 2020 confirmed successful nesting of Swallow-tailed Kites in the Sulphur River WMA, making this the first documented successful breeding pair since 1890 (Zellers 2020a,b). Sulphur River WMA contains over 6,475 ha (16,000 acres) of bottomland and wetlands, was created in the 1950s from wetland mitigation lands, and provides habitat for other species of rare and threatened animals (Zellers 2020a,b).

Few details of nest composition have been reported. Zellers (2020b) commented that nests can be found in dominant trees along the edge of wetlands. Chiavacci *et al*. (2011) reported that nests in White River NWR often were found in oak trees 30 m or taller that projected an average of 7.2 m above surrounding trees, consistent with the observations for these kites elsewhere (Brown *et al*. 1997; Meyer 2020). Studies in Texas found nests to be comprised of small hardwood sticks and twigs and may incorporate Spanish moss (Brown *et al.* 1997).

Chiavacci *et al*. (2011) documented nests at White River NWR in Arkansas Co. from 2002-2008, on dates ranging from 9 April–28 May. Additionally, a likely breeding pair was spotted in Miller Co. on 6 June 2015, assumed to be tending a nest (which could not be located from the ground). The most recent documentation was on 11 July 2020 at Sulphur River WMA (Miller Co.), where adults were seen feeding fledglings (Zellers 2020a,b). This sighting is thought to be the first successful breeding pair in Arkansas in over a century. While not all nests are successful, this nesting activity can be used to create a timeline of reproductive effort for this species in Arkansas. Suggested management includes conservation of sites where Swallow-tailed Kites have been known to attempt nesting (including super-emergent trees), minimizing disturbance at such sites from 1 April to 31 July, and uneven-age management of forest to create irregular canopy (Chiavacci *et al*. 2009).

Foods - Adult Swallow-tailed kites are known to consume vertebrates such as frogs, small reptiles, birds, and fishes, along with a variety of insects (Meyer 2020). Reports from Arkansas have included comments about seeing the birds feeding on dragonflies, caterpillars, a small rodent, and foraging over fields with large grasshopper populations. Meyer (2020) noted an important aspect of the diet of the Swallow-tailed Kites includes adults and larvae of stinging and biting insects.

Acknowledgments

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