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### **WHITE-WINGED DOVE (*Zenaida asiatica*) NESTING IN MEADE AND FINNEY COUNTIES, KANSAS**

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Abstract -- Rapid range expansion and subsequent nesting of White-winged Doves (*Zenaida asiatica*) in Kansas has resulted in the use of different habitats and materials in nest construction. Nest observation and dissection revealed nesting materials and host trees not found in the historic range of the White-winged Dove are being utilized. Southwestern Kansas nests are solitary structures as compared to colonial sites within the historic range of the species. New environmental threats are present in the expanded range of the species including probable nest destruction by Fox Squirrels (*Sciurus niger*) and the use of man-made materials in nest construction which may pose new threats to nesting success.

### **INTRODUCTION**

The North American White-winged Dove (*Zenaida asiatica*) population has recently been undergoing an expansion from its historic range (Schwertner et al. 2002). The northernmost observations in the Great Plains have occurred in Alberta, South Dakota, and Minnesota (Small et al. 2006). Much of this expansion is likely due to weather-related factors, as well as anthropogenic food sources, such as bird feeders (Fronimos et al. 2011).

This species of dove was previously considered a vagrant in Kansas with observations in only four counties prior to 1989 (Thompson and Ely 1989). The range expansion into Kansas has been extensive with observations in 36 counties by mid-2004 (Moore 2004), and Thompson et al. (2011) documented an additional nine counties bringing a total of 45 counties out of 105 in Kansas.

Nesting in Kansas was first observed in Atchison County on 15 May 2001 (Anderson 2001). Moore (2004) recorded breeding evidence with observations of fledged young in Finney County on 15 May 2004. Mike Rader (pers. comm.) suspected nesting in Trego County based upon the sighting of a young dove in Wakeeney on 30 August 2007. A nest being constructed by two individuals was observed on 23 March 2008 in Morton County (Cable and Seltman 2010). Additional breeding records have occurred in Ellis and Riley

counties (Thompson et al. 2011).

Anderson (2001), reports the Atchison County nest resembled the nest of the Mourning Dove. Herewith, we report on additional White-winged Dove breeding records including an extremely large nest found in Meade County.

## OBSERVATIONS

### The Arrival of Current Populations

**Meade County** -- H.E. Hartshorn recorded a White-winged Dove on 21 May 1999 in the rural area of central Meade County. In the fall of 2009, Brad Peterson and Mark Goldsberry reported harvesting one individual while hunting Mourning Doves (*Zenaida macroura*) near the Oklahoma state line south of Meade (M. Goldsberry, pers. comm.). There were multiple spring observations at the Flowers feeding station in the city of Meade from 2006 through 2008. Birds were overwintering there and a presumed nesting species by the winter of 2008-2009. By May 2010, the species had become fairly common at the Meade feeding station. All recent sightings have been in urban areas of the city of Meade and are primarily associated with feeding stations and their immediate surroundings.

**Finney County** -- The first documented sighting of a White-winged Dove was 14 June 2001 south of Garden City. The following year birds were observed 9 miles south and 3.3 miles west of Holcomb on 26 May 2002, and another individual was observed by Leonard Rich in Garden City on 13 August 2002. Two additional birds were observed by Tom and Sara Shane in Garden City on 28 April 2003, after which time one to three birds were repeatedly observed between April and November of the same year. By December 2004, the species had become well established in Garden City, when 41 individuals were observed at the Shane feeding station. Thereafter, numbers have remained high in the city with the highest annual counts at the Shane feeders of 143 birds in December of 2006, 151 in November of 2007, 104 in January 2008, 112 in October 2009, 143 in December 2010, 179 in January 2011, and 142 in September 2012.

### Nesting

**Meade County** -- The White-winged Dove had been suspected of nesting in Meade, for several years, therefore when a pair was observed performing courtship displays at 1845 h on 1 May 2012, an effort to locate a nest was initiated. This courtship display is well described by Wetmore in Bent (1932): saying “In displaying before females males had a curious habit or pose in which they raised the tail high and tilted the body forward. At the same time the tail was spread widely and then closed with a quick flash of the prominent black and white markings.” The display in Meade continued for over 15 minutes with the associated familiar call “*who cooks for you*” repeated over and over. On 5 May 2012, within a few feet of where the courtship display was noted, the pair was observed 3.4 meters (11 feet) above ground level in an eastern red-cedar tree (*Juniperus virginiana*), next to a nest in the very early stages of construction. The nest tree was located in a small row of trees in a residential area where several doves had been frequenting the Flowers feeding station. By the evening of 6 May, the nest had more than doubled in size with an adult sitting in the nest, presumably on eggs. On 9 May, the nest was even larger; but over time, the nest became smaller and more tightly woven (Figure 1). Both adults were seen in the vicinity of

the nest on a regular basis. They never flushed when approached, making the nest very difficult to locate. Observations were made from a safe distance to prevent disturbance since eggs were presumed to be present.

On 23 May 2012, one adult was seen perched on the edge of the nest, no longer brooding, and hatching was assumed. Schwertner et al. (2002) list an incubation time of 14 to 17 days with periods as long as 20 days. Harrison (1979) lists the incubation period as 14 days. Using 23 May as the hatch date and 14 days as the incubation period, egg laying likely occurred on or about May 9. Harrison (1979) states almost invariably White-winged Doves lay two eggs and eggs hatch about 24 hours apart. This was confirmed for the Meade County nest on 30 May when an adult bird was seen sitting with two squab in the nest (Figure 2).

A comparison of the two Meade squab with internet photos of Rock Pigeon squab (*Columba livia*) at WysInfo (2012) indicates the squab were approximately nine days old, making the hatch date of around 21 May. Based on Harrison (1979), Schwertner et al. (2002), and WysInfo (2012), one can assume with some certainty that egg laying occurred between 7-9 May, and hatching occurred between 21-23 May. Fledging occurred between the early evening hours of 3 June and the early morning hours of 4 June.

#### **Finney County -- Nesting of**

White-winged Doves was suspected in

Finney County during the period between 2003 and 2010 as evidenced by multiple recently-fledged young in the Shane yard in Garden City. The first recently-fledged White-winged Dove was observed on 15 May 2004 and was easily identified by the lack of a blue orbital ring and a light tan auricular patch and lores. The legs and feet of fledglings are grayish pink, while the bills are all pink, gradually turning gray from the distal end to the base of the bill over a number of weeks. Since 2004, additional first-of-season fledglings have been observed in the Shane yard between 4 May and 27 June. Successful reproduction of White-winged Doves continues to increase in Garden City with 33 juvenile doves observed 18 June 2012 in a flock of 41 in the Shane yard.



**Figure 1. White-winged Dove (*Zenaida asiatica*) nest on 16 May 2012 showing tight construction and the use of Virginia creeper (*Parthenocissus quinquefolia*) in the nest. As incubation progressed, the nest became more tightly woven. Photo by T. Flowers.**



**Figure 2. White-winged Dove (*Zenaida asiatica*) squab on 30 May 2012, approximately nine days after hatching and four days before fledging. Photo by T. Flowers.**

On 19 August 2011, Nonhof discovered a White-winged Dove nest in front of the Math and Science building on the Garden City Community College campus while conducting a tree identification lab. The nest was located 6.1 meters (20 feet) up on a north radiating horizontal limb of an American sycamore (*Platanus occidentalis*) tree. The nest was observed for about a week, but the eventual outcome was never determined.

On 20 June, T. Shane found the first White-winged Dove nest of the 2012 season also on the campus of Garden City Community College and in the same American sycamore. It was located approximately 5.5 meters (18 feet) high in the crotch of a vertical limb. The nest was very thin and made of small sticks. On 21 June, an adult bird was sitting on the nest presumably incubating eggs. By 7 July, a squab could be seen in the nest and it was noted that no visible addition of nesting materials had occurred. On 13 July, two squab could be seen, and by 16 July, the young were no longer in the nest and presumably fledged; however, no adults or young could be found in the vicinity.

A second 2012 nest was found by Cao on 16 July on the same campus about 7.3 meters (24 feet) up in a thornless honeylocust (*Gleditsia triacanthos*). The nest was located when a Fox Squirrel (*Sciurus niger*) most likely attacked the adult dove producing a shower of feathers; it then killed a squab from the nest. The squab was partially feathered but not yet capable of flight and was found at the base of the nest tree. About 30 minutes later, an adult bird was seen at the nest; the second squab was not observed. The nest was then abandoned. This nest tree was approximately 27.4 meters (90 feet) east of the 20 June 2012 nest tree.

A third nest was found 21 August 2012 by Nonhof in a similar manner to the second 2012 nest, the discovery of a partially feathered squab on the ground, essentially below the drip line in another thornless honeylocust tree. The squab was missing its head; presumably a Fox Squirrel depredated this nest since it was in the vicinity of the second and third nests. This nest was approximately 7.3 meters (24 feet) in the crotch of a vertical limb which was located approximately 10.1 meters (33 feet) east of the 16 July 2012 nest or 38.4 meters (126 feet) east of the 21 June 2012 nest. The presence of fly maggots suggested the squab had been dead for one or two days.

### **Nest Construction**

**Meade County** -- With the permission of the United States Fish and Wildlife Service, the Meade County White-winged Dove nest was retrieved for dissection. Flowers felt it could be beneficial to compare nest materials from the Meade nest with those within the more traditional range for this species because of the differences in available habitat and vegetation. Cottam and Trefethen (1968) state White-winged Doves in the Lower Rio Grande Valley “prefer to place their nests on relatively horizontal branches of thorny trees where they are firmly supported and easily accessible to the birds. Ebonies (*Pithecellobium flexicaule*), comas (*Bumelia lanuginosa*), and granjenos (*Celtis llida*) are preferred because of their heavy armament of thorns, which provides anchorage and discourages climbing predators.” They also mention that Salt Cedar (*Tamarix* sp.) as being used regularly along with various other tree and shrub species.

Cottam and Trefethen (1968) state one pair of White-winged Doves was observed during five days of nest building delivering 138 twigs to the nest and that the nest had been completed during this time. They further state, “The average period between the beginning of nest building and the first egg is probably about four days.” Saunders (*in*

Cottam and Trefethen 1968) watched another pair complete a nest of 100 twigs in two days while other pairs took from one week to 10 days to complete construction.

As may be expected, Cottam and Trefethen (1968) wrote “The type of material used to build the nest varies with its relative availability and the types of habitat occupied” and nests are “usually fashioned largely from dead twigs that have fallen from local trees.” Nests described by Saunders (*in* Cottam and Trefethen 1968) contained from fewer than 100 to more than 200 twigs. Some of the twigs had sharp thorns up to 13 mm (0.5 inch) in length which were used in the lower and middle layers to help reinforce the structure. Cottam and Trefethen (1968) stated most twigs were 9 mm (3/8 inch) in diameter or larger.

Flowers dissected the Meade County nest and identified most plant materials to species. Dead twig samples of local trees, shrubs and vines were collected for comparison to help in identification of nesting materials. The Meade nest contained over 363 individual items. The most unusual item used in construction was a single piece of monofilament fishing line measuring 1.8 meters (5 feet, 10 ½ inches) in length, which was intricately woven throughout the nest.

The literature reviewed does not mention any significant nest linings, however the Meade nest was lined with at least 45 pine needles presumably from Austrian pine (*Pinus nigra*) found in the neighborhood, all of which appeared to be shed needles collected from the ground. Needles were disarticulated and no longer in fascicles making definitive identification to species a matter of speculation.

The core of the nest was held together by 56 pieces of Virginia creeper (*Parthenocissus quinquefolia*), the longest being 9.25 inches (235 mm) in length. This material was neatly woven throughout the nest holding the other materials in place and effectively securing the nest to the tree branch. Other nesting materials were woven through the curled tendrils of the creeper.

Additional plant materials used in construction included 38 pieces of kochia (*Kochia scoparia*); 33 Siberian elm (*Ulmus pumila*) twigs up to 13 inches (330 mm) in length; 32 dead twigs from eastern red-cedar up to 9 ½ inches (240 mm) in length; 18 buffalograss (*Bouteloua dactyloides*) stolens, up to 8 inches (200 mm) in length; 13 red mulberry (*Morus rubra*) twigs; 12 unidentified pieces of grass, yellow in color; 7 honeylocust twigs; 2 Siberian elm leaves; 9 pieces of winter wheat (*Triticum aestivum*) straw up to 4.75 inches (122 mm) in length; 4 unidentified forb root masses; 1 Austrian pine twig; 1 Texas tumblegrass (*Schedonnardus paniculatus*) inflorescence; 1 windmill grass (*Chloris verticillata*) inflorescence; 1 unidentified forb, yellow in color; 1 unidentified forb, dark colored; 1 piece of Russian thistle (*Salsola pestifera*); 1 American redbud (*Cercis canadensis*) twig; and 84 unidentified twigs and forbs. No green vegetation was noted in the nest. Animal materials in the nest included 1 feather (possibly a body feather of young in the nest) and 1 unidentified Noctuid moth. In addition, 131 pieces of fecal matter were in the nest. All material types used in construction were available within 30.5 meters (100 feet) of the nest location.

**Finney County** -- All four nests located on the campus of Garden City Community College during 2011 and 2012 were of similar construction to a Mourning Dove, but slightly larger. No attempts were made to retrieve those nests.

## DISCUSSION

**Nest Construction:** As a result of geographical location and the availability of nest construction materials, the Meade County White-winged Dove nest differed from what is reported in the literature from their normal range. This does not account for the structural differences in the nests. Both Harrison (1979) and Cottam and Trefethen (1968) allude to the flimsy construction of nests of this species. Wetmore, in Bent (1932) in describing nests in Arizona stated “the eggs... often were visible through the loosely interlaced twigs at the sides.” The Meade County nest was well constructed, primarily because of the use of Virginia creeper and its tightly coiled tendrils. A significant percent of grass was used in construction and the nest was lined with Austrian pine needles. The grass and pine needles may have simply been materials of convenience but it is interesting to note that there was no mention of like materials in other reports except for Bent (1932) who states that nests he observed in Arizona “were made entirely of grass, weed stems, and straws...” The only record of White-winged Dove liberally using pine needles as linings in two nests was recorded by Alexander Skutch (1964) in the Sierra de Tecpam highlands of Guatemala. Fishing twine is certainly unique to the Meade County nest as no man-made products were found in other nests reviewed in the literature. The Meade County nest was slightly larger than those mentioned elsewhere; it measured 140 mm (5 ½ inches) in diameter and 65 mm (2 ½ inches) in height and had a small, depressed cup for the eggs. There were over 363 individual pieces of material in the nest. Although several species of host trees and shrubs are cited in other works, no reference was found for the eastern red-cedar, American sycamore or thornless honeylocust.

**Nest Predation:** Depredation by Great-tailed Grackles (*Quiscalus mexicanus*) was the primary cause of nest failure for White-winged Doves according to Fulbright and Hewitt (2008) and Cottam and Trefethen (1968). Although grackles were present in the vicinity of the Meade County nest, they did not appear to be a common nest predator.

Two of the four Finney County nests were highly suspected as being preyed upon by one or more fox squirrels which may be an increasing threat in the urban areas of southwest Kansas. The predation of White-winged Dove eggs was recently reported for the first time by fox squirrel in south Texas (Colson et al. 2011). Two young Mourning Dove squabs were observed being devoured by a fox squirrel toward the end of the nesting season on 5 August 2012 in Lamar, Colorado (J. Thompson, pers. comm.). Farley and Dunn (2007) reported a fox squirrel consuming an adult Northern Flicker in Hays, Kansas, and an adult Northern Cardinal was consumed by a fox squirrel in a White-winged Dove trap, in Mason, Texas (Small et al. 2008). Flowers has witnessed fox squirrels attacking bird species other than doves entangled in mist nets at his Meade County banding station.

Hall (1955) does not mention birds or other vertebrates as being prey items of fox squirrels in Kansas. Bee et al. (1981) does mention that some small vertebrates are eaten in Kansas. Cahalane (1961) states, “Bird killing is sometimes charged against the squirrel, although rarely. I tried to tempt some of my caged animals with live English sparrows and found them indifferent. Even when the birds were dead, the squirrels would eat only a little of the brains.” Callahan (1993) believed that the accumulation of bird attack sightings by squirrels suggested the behavior was more frequent than summarized by many authors, since animal tissue was hard to determine in stomach analyses.

In reference to White-winged Dove, Small et al. (2006) feel “breeding populations

outside (of) traditional breeding areas are almost exclusively restricted to urban areas.” So far, all nests found in Meade and Finney Counties have been found in urban areas, but this may be only a reflection of observer bias as it relates to areas covered.

### CONCLUSION

White-winged Doves are increasing in numbers in Meade and Finney Counties and other areas in southwestern Kansas. Further study is needed on the nesting habits of this interesting newcomer to our area. Special emphasis needs to be directed in Kansas to salt cedar communities along riparian corridors of the Cimarron River and Crooked Creek in Seward, Meade and Clark Counties and along the Arkansas River in Finney County. Additional data needs to be collected to ascertain the impacts of fox squirrels on nest failure of urban populations in southwest Kansas and the High Plains.

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