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Hybridization of Mountain Bluebird and Eastern Bluebird in Northeastern Kansas.

By

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INTRODUCTION

The natural occurrence of hybridizations is of great evolutionary importance. Both molecular and ecological studies suggest that natural hybridizations have played a prominent role in the evolution of numerous species complexes (Arnold 1992). Repeated hybridization events between sister taxa may lead to the establishment of a new taxon with intermediate characters (e.g. Gilded Flicker-Short 1965) or reinforce reproductive barriers through selection for conspecific matings (Arnold 1992). In addition, hybridizations have been implicated as an important source of phenotypic and genetic variation (e.g. Darwin's Finches- Grant and Grant 1989, Grant 1993).

It has been estimated that approximately 9% of all bird species are known to hybridize (Grant and Grant 1992), but considerable variation exists both



Figure 1 - Male Mountain Bluebird with female Eastern Bluebird at nest box.

geographically and taxonomically. The Great Plains region is well known as an important hybrid zone for birds with 14 pairs of species known to hybridize (Rising 1983). Hybridization events between Eastern (*Sialia sialis*), and Mountain Bluebirds (*Sialia currucoides*) have been reported as rare within this region (Rising 1983). In southwestern Manitoba, Canada, a region of sympatry for these species, hybridizations accounted for only 0.10 - 0.56% of 8,095 pairs from 1969-1980 (Rounds and Munro 1982). Not surprisingly, all but one of the hybridization events (Stebly 1986) reported for these species have occurred within this narrow range of species overlap (figure 2). Here, we report unusual hybridization events between a male Mountain Bluebird and two female Eastern Bluebirds (figure 1). These events occurred well outside the breeding range of Mountain Bluebirds on a study site south of Manhattan, Kansas.

METHODS

Study Area and Procedures

The following observations were made on the Konza Prairie Research Natural Area located south of Manhattan, Kansas in Riley and Geary counties (39° 05' N, 97° 35' W). A total of six bluebird boxes were monitored for breeding activity beginning in April and continuing until late August 1997. These boxes are located in periodically burned brome (*Bromus* sp.) pastures surrounding the Konza gallery forest (see Zimmerman 1993 for description). Each box is mounted on steel conduit (110 cm above the ground) and is equipped with a removable lid (nest box dimensions: 7.5 cm width x 7 cm depth x 22.7cm height, nest hole diameter = 3.5 cm). All boxes were checked weekly to determine nesting status and more frequently near the time of hatching and fledging. Nestlings were individually marked with permanent marker to facilitate recognition. Tarsus length and wing chord were measured to the nearest 0.5 mm. Nestling mass was determined by weighing to the nearest 0.1 g on a portable electronic balance. Observations of nesting activity were made by placing a videocamera one meter from the nestbox and recording for two hours.

Species

The Eastern Bluebird is a common resident throughout much of the eastern and central portions of Kansas (figure 1, Thompson and Ely 1992). Eastern Bluebirds are a common summer resident on Konza with nesting beginning as early as 21 March (Zimmerman 1993). Many pairs breeding on this site probably produce two broods each year (E.D. Kennedy pers. comm.). Clutch sizes for Eastern Bluebirds in Kansas range from 3-6, but typically is four or five eggs (Thompson and Ely 1992). Male and female Eastern Bluebirds are similar in size and body mass (male wing chord ranges from 96 - 109mm, and females from 96 - 104mm; Pyle et al. 1987, average body mass = 31.6 g; Dunning 1993).

The Mountain Bluebird is an uncommon transient and winter resident in western Kansas and less common eastward to Cloud and Cowley counties (Thompson and Ely 1992). Extreme dates for this species have been previously reported as 6 October and 5 May (ibid.). Only two records exist of the Mountain Bluebird on Konza Prairie: the first was of a single Mountain Bluebird with a group of Eastern Bluebirds on 8 April 1986 and the second was of a flock of six birds on 17 January 1989 (Zimmerman 1993). In addition, there are only two potential state breeding records for Mountain Bluebirds, both in the extreme western portions of Kansas: a full-grown juvenile was collected in Hamilton County on 20 June 1911 and four fledged young, were seen in Wallace County on 8 June 1986 (Thompson and Ely 1992). Clutch sizes of Mountain Bluebirds range from four to seven, but five or six eggs are most common (Munro et al. 1981). In Montana, Mountain Bluebirds regularly attempt two broods per year but rarely three (Power and Lombardo 1996). Adult Mountain Bluebirds are lighter than Eastern Bluebirds in mass (29.6 g ; Dunning 1993), but have longer wing chords (males 110 - 121mm and females 103 - 116mm; Pyle et al. 1987).

RESULTS AND DISCUSSION

On 29 April, a female Eastern Bluebird was flushed from a nestbox which contained five warm eggs. The nest was checked periodically until 8 May, when four newly hatched nestlings and an unhatched egg were discovered. It was at this visit that a male Mountain Bluebird was first found perching near the nestbox and was observed making several feeding trips into the box. By the appearance of the nestlings and sequence of nest visits, brood day zero was estimated as 8 May and back dating suggested laying was initiated (egg one day) on 22 April. Both male and female made equal number of feeding trips on brood day one (4.84 trips / hr) but by day six the male had doubled his feeding rate (male = 8.22 trips / hr; female = 4.84 trips/ hr). The nestlings were last observed in the nestbox on 21 May when the female was captured in a mistnet and banded. The nest was not rechecked until 26 May when the male was observed feeding fledglings approximately ten meters from the nestbox. The adults and fledglings were not observed again until 10 June when

the female was observed carrying nest material into a nearby nestbox. At least three juveniles were also present and the male was observed feeding one of them. The pair was periodically observed together until 15 June when two eggs were discovered. The eggs were found cold on 17 June and one of the two was out of the nest cup with holes in the shell, consistent with avian predation. A singing male House Wren (*Troglodytes aedon*) was observed nearby. On this same date, a male Eastern Bluebird was observed singing on the pair's previous territory.

After this nest failure the Eastern Bluebird female deserted the male Mountain Bluebird and was not observed again until 26 June when she was found on her previous territory with a male Eastern Bluebird. Also, a single hybrid juvenile was observed following the Mountain Bluebird. Both Mountain and Eastern males were observed counter-singing and appeared to maintain distinct boundaries, yet no aggressive territorial interactions were observed. It has been recorded that males of both species compete for nest-sites (Lane 1973) but data are still lacking regarding other aspects of interspecific territoriality (Power and Lombardo 1996). The female Eastern Bluebird was again observed the following day on the pair's previous territory, actively pursued by the Eastern Bluebird male.

By 29 June the Mountain Bluebird had attracted a second Eastern Bluebird mate and two new eggs were discovered in their nestbox, suggesting an egg one day of 28 June. The nestbox was videotaped at 08:00 hours to record parental behavior and identify the female. Viewing of this tape revealed the first documented observation of copulation between an Eastern and Mountain Bluebird. The male landed on top of the nestbox and began hopping from corner to corner, singing with wings outstretched and quivering. After only four seconds of this display, an unbanded female Eastern Bluebird landed on the box, lowered her head and raised her tail with rectrices extended. The male immediately hopped on her back and copulated for approximately 1.5 seconds. No postcopulatory display was observed. The male flew to the nestbox entrance, looked inside, then flew off. The female entered the nestbox and remained for 16 minutes. The clutch of four eggs was completed on 1 July with nestlings hatching 11 days later on 12 July. The nest was checked periodically and all four young were assumed to fledge.

Near the time of fledging, the contour feathers of all hybrid nestlings appeared grayer than Eastern Bluebird nestlings, and the breast feathers of hybrids tended to have less red coloration. The mass and size of hybrid nestlings was not noticeably different from Eastern Bluebird nestlings found in Kansas (table 1).

The occurrence of a Mountain Bluebird roughly 500 km east of the eastern edge of its breeding range is in itself unusual. However, the successful production of two hybrid broods is an extremely rare occurrence. Mountain Bluebirds have been reported once (1988) on the Manhattan Christmas Bird Count (Zimmerman 1989), which includes the Konza Prairie. Springtime records for this species in Kansas are very rare: Thompson and Ely (1992) note that 5 May represents the latest spring date with the exception of the two June reports from western Kansas. In addition, Mountain Bluebird numbers reported on Kansas Christmas Bird Counts have increased in recent years, with a high of 1670 seen in 1996. These were reported on seven out of 54 counts in the state that year (Thompson 1997). The Junction City Christmas Bird Count, covering an area a few miles west of Konza Prairie, has reported Mountain Bluebirds 12 times in the 39 year count history, with the highest number (58) reported in 1996. Mountain Bluebirds have not been reported on the five Spring Migration Counts (second Saturday in May, 1993-1997) conducted in Kansas (Rintoul, unpublished results). We suspect that this adult male was a bird that wintered nearby and remained to breed in the area.

Mountain Bluebirds extended their range eastward into the grasslands of the Great Plains around 1900 (Bent 1949) and began competing with Eastern Bluebirds for nest-sites (Miller 1970, Power and Lombardo 1996). However, fire-suppression management practices led to a reduction of the open habitats preferred by this species, and populations began to decline (Power and Lombardo 1996). In fact, the Mountain Bluebird was formerly listed as a species in danger on the National Audubon Society's Blue List (Arbib 1971, 1972, 1974). The current population has remained stable and has even increased in Colorado (Power and Lombardo 1996)

and Manitoba, Canada (Rounds and Munro 1982). This increase has been attributed to the installation of nestboxes throughout these areas. The unusual incident reported here may become a more frequently observed occurrence in Kansas if populations continue to increase.

ACKNOWLEDGMENTS

We wish to thank N. Bargmann for assistance in the field, J. Zimmerman for comments on drafts of this manuscript and E. Horne for assistance with the range map. Finally, D. Robinson was most generous by allowing us to use his nestling body size data.

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Hybrids Nest 1			
Brood Day	mean broodmass (g) ± (stderr)	tarsus (mm) ± (stderr)	wing chord (mm) ± (stderr)
3	-	-	-
6	17.54 (0.68)	-	-
8	22.56 (0.62)	17.4 (0.50)	30.0 (0.80)
10	24.0 (0.57)	19.0 (0.30)	42.7 (0.80)
13	27.6 (0.48)	19.3 (0.20)	57.1 (0.70)

Hybrids Nest 2			
Brood Day	mean broodmass (g) ± (stderr)	tarsus (mm) ± (stderr)	wing chord (mm) ± (stderr)
3	8.78 (0.86)	-	-
6	15.15 (0.85)	17.1 (0.40)	20.8 (1.30)
8	23.13 (1.3)	-	-
10	23.53 (1.14)	22.3 (0.50)	-
13	-	-	-

Eastern Bluebird		
Brood Day	mean broodmass (g) ± (stderr)	tarsus (mm) ± (stderr)
3	8.34 (0.49)	10.96 (0.46)
6	15.58 (1.55)	17.08 (1.57)
8	22.21 (1.94)	20.89 (1.59)
10	26.48 (0.33)	23.7 (0)
13	28.18 (1.28)	24.7 (0)

Table 1 – Body measurements of *Sialia currucoides* X *Sialia sialis* hybrid nestlings by brood day (brood day 0 = day nestlings hatch) and measurements of *Sialia sialis* nestlings taken from a study area south of Konza Prairie Research Natural Area for comparison (D. Robinson, unpublished data).

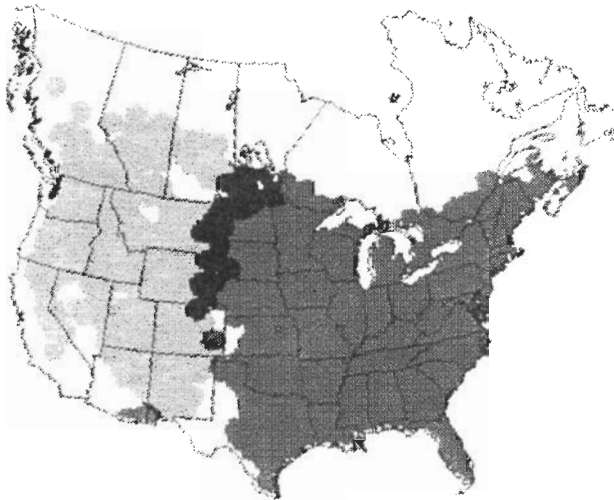


Figure 2 – Breeding range of Eastern Bluebird (*Sialia sialis* -dark gray) and Mountain Bluebirds (*Sialia currucoides* - light gray). The regions in black correspond to areas of sympatry and the star represents the location of this study (Range map redrawn from Sauer et al. 1997).

1997 REPORT OF THE KANSAS BIRD RECORDS COMMITTEE

This report summarizes records received and evaluated by the committee for the calendar year 1997, as well as some decisions pending from previous years. A total of 54 submissions were received by the committee in 1997 of which 47 were circulated for evaluation, plus five from previous years.

Record submissions are assigned a sequential number in the order in which they are received with the year of receipt as a prefix. Not all submissions that receive a number are circulated. Birds are listed in phylogenetic order under each of two categories: Records Accepted and Records Rejected. Taxonomy and nomenclature follow the A.O.U. Checklist of North American Birds (1983) and all subsequent supplements.

After the common and scientific name follows the KBRC record number; the number of individuals seen with age or plumage notes; date(s) of observation; locality, including county, observer(s), with those documenting the record listed first; supporting physical evidence, if any; and finally, comments and notes on changes in the bird's status on the KOS Checklist. Rejected records have the observer(s) names omitted and a brief explanation as to the reason for rejection.

RECORDS ACCEPTED

Red-throated Loon (*Gavia stellata*); 97-15; 1 adult in basic plumage; 29 November 1996; Cheney Reservoir, Reno Co; Pete Janzen, Chet Gresham, and Sandy Berger. 16th state record.

Red-throated Loon (*Gavia stellata*); 97-17; 1 adult in basic plumage; 20-24 April 1997; Clinton Lake, Douglas Co; Galen Pittman and Alexis Powell. 17th state record.

Red-throated Loon (*Gavia stellata*); 97-53; 1 individual in basic plumage; 16 December 1997; Wilson Lake, Russell Co; Mike Rader. 18th state record.

Red-necked Grebe (*Podiceps grisegena*); 97-16; 1 individual molting into alternate plumage; 27 March 1997; Quivira NWR, Stafford Co; Pete Janzen. 14th state record.

Clark's Grebe (*Aechmophorus clarkii*); 97-23 & 97-30; 1 or 2 adults observed engaged in courtship displays with a Western Grebe, possibly breeding later in the season; 26 April - 24 May 1997; Cheyenne Bottoms, Barton Co; Pete Janzen, Lloyd Moore, and mob.; photographs. Tenth state record, first record verified with physical evidence. Hypothetical status removed.

Glossy Ibis (*Plegadis falcinellus*); 97-22; 1 adult in alternate plumage; 26 April 1997; near Cheyenne Bottoms, Barton Co; Pete Janzen and Chet Gresham. Seventh state record.

Glossy Ibis (*Plegadis falcinellus*); 97-27; 1 adult in alternate plumage; 24 May 1997; Quivira NWR, Stafford Co; Galen Pittman. Eighth state record.

Wood Stork (*Mycteria americana*); 97-48; 1 immature observed for two days at a large residential pond; August 1985; Olathe, Johnson Co; Debarah Arnett and mob.; photograph. Sixth state record.

Barrow's Goldeneye (*Bucephala islandica*); 97-02; 1 adult male; 18 January 1997; Tuttle Creek Reservoir, Pottawatomie Co; David and Amy Rintoul and John and Diane Row. 11th state record.

Laughing Gull (*Larus atricilla*); 94-09; 1 immature in first winter plumage, documentation not circulated when first received; 4-6 January 1994; Perry Lake, Jefferson Co; Richard Rucker, Joanne Brier, and Glen Koontz.

Mew Gull (*Larus canus*); 97-14; 1 adult originally documented as a "count week" bird for the 1995 Manhattan CBC; 17 December 1995; Tuttle Creek Reservoir, Riley Co; Lowell Johnson. First state record, added to the KOS Checklist as hypothetical.

Thayer's Gull (*Larus thayeri*); 97-12; 1 immature in first winter plumage; 8-10 November 1996; Perry Lake, Jefferson Co; Lloyd Moore and Mick McHugh; photographs. Uncommon winter resident that is rarely documented with physical evidence.

Iceland Gull (*Larus glaucooides*); 95-08; 1 immature in first winter plumage; 11-17 December 1994; near Wichita, Sedgwick Co; Pete Janzen, Dan Kilby, and Don Vannoy. First state record, added to the KOS Checklist as hypothetical. Record

previously rejected, reconsidered, and accepted in 1997.

Iceland Gull (*Larus glaucooides*); 97-09; 1 immature in second winter plumage; 22 February 1997; Clinton Lake, Douglas Co; Mick McHugh, Galen Pittman, and Phil Wedge. Second state record.

Iceland Gull (*Larus glaucooides*); 97-31; 1 immature in first winter plumage; 23 February 1997; Clinton Lake, Douglas Co; David and Emily Seibel. Third state record.

Iceland Gull (*Larus glaucooides*); 97-10; 1 immature in first winter plumage; 1 March 1997; Melvern Lake, Osage Co; Galen Pittman, Lloyd Moore, Art Swalwell, and mob.; photographs. Fourth state record, first record verified with physical evidence. Hypothetical status removed.

Lesser Black-backed Gull (*Larus fuscus*); 97-01; 1 immature in first winter plumage; 21 December 1996; Clinton Lake, Douglas Co; Mick McHugh and Mark Corder; video. Second state record, first record verified with physical evidence. Hypothetical status removed.

Lesser Black-backed Gull (*Larus fuscus*); 97-04; 1 adult in winter plumage; 21 December 1996; Wilson Lake, Russell Co; Mike Rader, Ben Nondorf, and mob.; photographs. Third state record.

Black-legged Kittiwake (*Rissa tridactyla*); 97-03; 3 immatures in first winter plumage; 1-9 December 1996; Tuttle Creek Reservoir, Pottowatomie Co; David Rintoul, Lloyd Moore, Lowell Johnson, and mob.; photographs. 12th state record.

Black-legged Kittiwake (*Rissa tridactyla*); 97-13; 1 immature in first winter plumage; 25 December 1996 - 2 January 1997; Perry Lake, Jefferson Co; Lloyd Moore, Alexis Powell, and mob. 13th state record.

Black-legged Kittiwake (*Rissa tridactyla*); 97-45; 1 immature in first winter plumage; 9 November 1997; Quivira NWR, Stafford Co; Tyler and Leon Hicks. 14th state record.

Sabine's Gull (*Xema sabini*); 97-11; 2 immatures in first winter plumage; 27 September - 12 October 1996; Quivira NWR, Stafford Co; Mike Rader and Harold McFadden; photographs. Occasional transient that is rarely documented with physical evidence.

Long-billed Murrelet (*Brachyramphus perdix*); 97-51; 1 individual in basic plumage; 21-22 November 1997; Wilson Lake, Russell Co; Mike Rader, Scott Seltman, and mob. First state record, added to the KOS Checklist as hypothetical.

Eurasian Collared-Dove (*Streptopelia decaocto*); 97-33; 4 adults, probably breeding; 15 May-21 June 1997; Goodland, Sherman Co; Galen Pittman, John Palmquist, Ken Sanderson, and mob. . First state record, added to the KOS Checklist as hypothetical.

White-winged Dove (*Zenaida asiatica*); 97-20; 1 adult; 19-24 April 1997; Burns, Marion Co; Lloyd Moore, Galen Pittman, Dorthea Strotkamp, and mob.; photographs. Seventh state record.

White-winged Dove (*Zenaida asiatica*); 97-44; 1 adult; 30 August 1997; Hutchinson, Reno Co; Lloyd and Linda Willbanks; photographs. Eighth state record.

Western Screech-Owl (*Otus kennicottii*); 97-06; 1 individual heard calling; 18 January 1997; Along the Cimarron River, Morton Co; Chris Hobbs, Sebastian Patti, and Mike Rader. Third record.

Ruby-throated Hummingbird (*Archilochus colubris*); 97-37; 1 adult male visiting feeders; 31 August 1997; Liberal, Seward Co; Mick McHugh and mob. Although this species is common in other parts of the state, confirmed records for southwest Kansas are rare.

Anna's Hummingbird (*Calypte anna*); 97-05; 1 immature male at feeder; August 1996; Elkhart, Morton Co; Lawrence and Ruth Smith; video. Fourth record.

Rufous Hummingbird (*Selasphorus rufus*); 97-36; 1 adult male at feeders; 28-29 July 1997; Perry Lake, Jefferson Co; Richard Rucker. Uncommon transient with few confirmed records of adult males.

Rufous Hummingbird (*Selasphorus rufus*); 97-52; 1 adult female identified from observations and measurements taken in the hand when captured and banded; 20 November - 6 December 1997; Overland Park, Johnson Co; JoAnn Garret, Nancy

and Jane Leo, George Taylor, and Jan Hall. Uncommon transient with very few confirmed records of this bird in the hand.

Gray Flycatcher (*Empidonax wrightii*); 97-40; 1 individual in worn fall plumage; 21 September 1997; along the Cimarron River, Morton Co; Pete Janzen, Tyler Hicks, Carol Schwab, Chet Gresham. Fifth state record.

Ash-throated Flycatcher (*Myiarchus cinerascens*); 97-38; 1 individual; 16 September 1997; Marias des Cygnes Wildlife Area, Linn Co; Mick McHugh. Very few confirmed records of this occasional transient and summer resident in any part of the state, other than extreme southwest Kansas.

Gray Vireo (*Vireo vicinior*); 96-39; 1 individual; 5 May 1996; Elkhart, Morton Co; Ted Cable, Mike Rader, Scott Seltman, and mob.; photographs. First state record, verified with physical evidence. Added to the KOS Checklist.

Cassin's Vireo (*Vireo cassinii*); 93-16; 1 individual; 4 September 1993; North fork of the Cimarron River, Morton Co; Mick McHugh and mob. This documentation was not circulated when first received. This record was reviewed in 1997 due to the recent action of the A.O.U. in splitting and elevating this former Solitary Vireo subspecies to full species status.

Clark's Nutcracker (*Nucifraga columbiana*); 97-07; 1; 4 February 1997; Ulysses. Grant Co; Chris Hobbs, Sebastian Patti, and Galen Pittman. This irruptive causal visitor to Kansas has had few recent confirmed sightings in the state.

Fish Crow (*Corvus ossifragus*); 97-18; 15+ individuals, possibly nesting; 19 April 1997; near Galena, Cherokee Co; Mark Corder; video. Sixth state record, first record verified with physical evidence. Hypothetical status removed.

Common Raven (*Corvus corax*); 97-50; 3 individuals; 8 November 1997; Point of Rocks, Morton Co; Sebastian Patti and Mike Rader. First confirmed record of this formerly common and extirpated species in Kansas, since very early in this century.

Brown-headed Nuthatch (*Sitta pusilla*); 97-54; 1 individual; 25 December 1997 - 24 January 1998; Mission Hills, Johnson Co; Mick McHugh, Chris Hobbs, Roger McNeill, Mike Whited, and mob; photographs. First state record, verified with physical evidence. Added to the KOS Checklist.

Northern Wheatear (*Oenanthe oenanthe*); 97-19; 1 adult male; 5 April 1997; Cheyenne Co; Daniel and Lynn Busse, and Dale Henderson. First state record, added to the KOS Checklist as hypothetical.

Western Bluebird (*Sialia mexicana*); 97-49; 1 adult female seen and heard calling; 8 November 1997; Point of Rocks, Morton Co; Sebastian Patti. Third state record.

Varied Thrush (*Ixoreus naevius*); 97-42; 1 adult female; 27 October 1997; Elkhart, Morton Co; Ruth and Lawrence Smith. There have been few recent confirmed sighting of this causal winter visitor to Kansas.

Worm-eating Warbler (*Helmitheros vermivorus*); 94-14; 1 adult, documentation not circulated when first received; 9 July 1994; near Marias des Cygnes Wildlife Area, Linn Co; Lloyd Moore. This is the first confirmed summer record of this rare species in Kansas since early this century.

Swainson's Warbler (*Limnothlypis swainsonii*); 97-08; 1 adult; 7 May 1996; Wichita, Sedgwick Co; John Northrup. Seventh state record.

Hooded Warbler (*Wilsonia citrina*); 97-34; 1 immature, "young of the year"; 20 July 1997; near Perry Lake, Jefferson Co; Mick McHugh. There are very few "breeding" records of this rare transient and casual summer resident in Kansas.

Golden-crowned Sparrow (*Zonotrichia atricapilla*); 97-24; 1 adult; 4 May 1997; Elkhart, Morton Co; Ruth and Lawrence Smith. 15th state record.

Cassin's Finch (*Carpodacus cassinii*); 97-21; 8 individuals (3 males and 5 females in a flock) seen and heard calling; 8 December 1996; Wilburton crossing of the Cimarron River, Morton Co; Pete Janzen and Jim Nickel. There are few records of flocks of this occasional winter visitor in Kansas.

White-winged Crossbill (*Loxia leucoptera*); 97-43 & 97-47; 1 adult male; 10-18 November 1997; Olathe, Johnson Co; Debarah Arnett, Chris Hobbs, and mob; photograph. There are few recent records, confirmed with physical evidence, of this irruptive winter visitor in Kansas.

RECORDS REJECTED

Magnificent Frigatebird (*Fregata magnificens*); 97-35; 1 individual; 28 July 1997; Tuttle Creek Reservoir, Riley Co; Identification questionable: description of the bird was sketchy and had insufficient details to eliminate other large soaring species.

Hammond's Flycatcher (*Empidonax hammondi*); 97-41; 1 individual; 20-21 September 1997; Elkhart, Morton Co; Identification questionable. Although the description was complete, no vocalizations were heard and there were insufficient details to conclusively eliminate other species of *Empidonax* flycatchers.

The following is a list of the members and alternates of the KBRC for the period covered by this report, plus Christopher Hobbs and Mick McHugh for the first part of 1997.

Position #1 : Pete Janzen
Position #2 : David Seibel, Chairperson
Position #3 : David Rintoul
Position #4 : Max Thompson
Position #5 : Lloyd Moore
Alternate #1 : Sebastian Patti
Position #6 : Galen Pittman, Secretary
Position #7 : Roger Boyd
Alternate #2 : Mike Rader
Submitted 1 May 1998
Galen L. Pittman, KBRC Secretary

BALD EAGLE NESTING ACTIVITY IN KANSAS - 1997

By
Michael A. Watkins' and Daniel W. Mulhern²

INTRODUCTION

Seven documented Bald Eagle (*Haliaeetus leucocephalus*) nests in Kansas successfully fledged 16 juvenile eagles in 1997. This exceeded the 1994 record when 12 eagles were fledged from five nesting territories (Watkins et al. 1994) and included young from three new nest sites (table 1). Since documentation of the first Bald Eagle nest in 1989, 64 eaglets have fledged from nests in Kansas.

METHODS

Periodic observations of known nesting territories began in January 1997. When eagle activity increased around a nest site, monitoring efforts also intensified. As critical nesting events approached, weekly visits were increased to daily observations, where possible. Beginning incubation dates were established by observing eagles, with binoculars and spotting scopes, setting low and tight on the nest, switching of incubation duties and/or rolling eggs. Hatch dates were determined by adult brooding postures, observation of feeding behavior, and/or observed chick defecations. Fledging dates were established when juveniles were observed flying or perched in adjacent trees. All dates are assumed to be plus or minus 2 days.

RESULTS

CLINTON LAKE -- In 1989, a pair of Bald Eagles established the first documented successful nest in Kansas (Schwilling et al. 1989). A pair of eagles has returned to use the nest every year (Watkins et al., 1997). In 1997, the eagles, including the previously captured male with purple visual identification band E, began displaying incubation behavior on 13 February (table 2). The eggs hatched on or about 21 March. The U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers banded the two female eaglets and one male eaglet on 5 May with

NEST LOCATION	NUMBER OF EAGLETS FLEDGED	
	1997	TOTAL (1989 - 1997)
Clinton Lake	3	25
Hodgeman County	0	10
Hillsdale Lake	2	9
Perry Lake	3	7
Wolf Creek Lake	3	8
Stafford County	2	2
Jefferson County	1	1
Sebelius Reservoir	2	2
TOTAL	16	64

Table 1 - Bald Eagle Nests and Nesting Success in Kansas

purple visual identification bands 2S, 2T and 2U. The juveniles fledged on 10 June. In September 1997, the partial remains of Eagle 2S were found in Cass County, Missouri. A cause of death could not be determined. This was the second verified death of a Bald Eagle hatched and fledged from the Clinton nest site.

The adults have fledged three young annually during seven of their nine nesting seasons and two young annually during the other two years. A total of 25 eagles have been fledged from the nest over the past nine years. This is unusual since the average number of young fledged annually is 2.8, compared to the national average of 1.6 (Stalmaster 1987).

HILLSDALE LAKE - The same pair of eagles returned to the Hillsdale nest for the fifth year. Leg bands individually identified both adults. The male had a purple visual identification band B and was fledged from the Clinton Lake nest site in 1989. The female had a white visual identification band E-27 and was hatched from Eufaula Lake, Oklahoma in 1990 (Mulhern et al. 1994). They began displaying incubation behavior on 14 February and the eggs hatched on or about 25 March

NESTING CHRONOLOGY AND BANDING DATA	CLINTON LAKE	HILLSDALE LAKE	PERRY LAKE	WOLF CREEK LAKE
Incubation behavior begins	Feb. 13	Feb. 14	March 02	March 05
Eggs hatch	March 21	March 25	April 07	April 14
Days of observed incubation behavior	36	39	36	40
Date eaglets fledged	June 10	June 06	June 20	June 30
No. of young fledged	3	2	3	3
Fledgling age (days)	81	73	74	77
Banding dates	May 05	--	--	May 24
No. of eaglets banded	3	--	--	3
Purple visual identification bands used	2S, 2T, 2U	--	--	2V, 2W, 2X

Table 2 - Bald Eagle Nesting Data. 1997.

(table 2). The two juveniles fledged on 6 June. The adults have fledged nine young since 1993.

The nest, which was used every year since 1993, was partially destroyed by inclement weather during September 1996 (Watkins et al. 1997). The pair refurbished and used the old nest even though a main support branch was significantly damaged during the storm.

PERRY LAKE - A pair of Bald Eagles including a male with purple visual identification band A, which originally fledged from the first Clinton Lake nest site in 1989, returned to the nesting territory in 1997. The pair began displaying incubation behavior on 2 March in the same nest used in 1996. This was the first time the pair had used the same nest two consecutive years. The three eaglets hatched on or about 7 April (Table 2). The pair has fledged seven juveniles from the nesting territory since 1994.

WOLF CREEK LAKE - A pair of eagles began displaying incubation behavior around 5 March and 3 eaglets hatched on or about 14 April (Table 2). The U.S. Fish and Wildlife Service banded the two male eaglets and one female eaglet on 24 May. The eaglets were fitted with purple visual identification bands 2V, 2W and 2X. The juveniles fledged on or about 30 June. The pair has fledged 8 young since 1994.

STAFFORD COUNTY - A pair of Bald Eagles refurbished a nest along the North Fork of the Ninescah River that was destroyed by a storm in 1996 (Watkins et al. 1996). The nest was located in a live cottonwood (*Populus deltoides*) tree approximately 16 m above the ground. The pair hatched and successfully fledged two young. This was the fourth nesting attempt, but the first that was successful in the nesting territory. The nest tree was not climbable. The adult female was trapped and banded by the U.S. Fish and Wildlife Service on 26 June. She was fitted with the purple visual identification band 2Y.

SEBELIUS RESERVOIR - In the spring of 1997 a nest was discovered at Sebelius Reservoir, Norton County. The nest was constructed approximately nine meters high in a dead Cottonwood tree, located in a cluster of flooded timber approximately 550 m off shore. Sebelius Reservoir is a 931 ha irrigation project constructed by the Bureau of Land Management in 1965.

Both eagles exhibited typical adult plumage. The pair successfully fledged two young. A banding attempt on 18 June revealed the nest could not be entered safely due to weak supporting branches and no eagles were banded.

JEFFERSON COUNTY - Another first year nest was discovered in 1997 along the riparian corridor of the Kansas River. The nest was constructed approximately 15 m above the ground in a live Cottonwood tree. The nest tree is adjacent to a crop field and routine-farming operations had no adverse impacts on nesting success.

Both eagles displayed typical adult plumage. One adult had an orange patagial tag on its right wing and a light blue tag on its left wing, but no identifying numbers were observed. This eagle was released between 1988 and 1990 as part of the Missouri Department of Conservation's, Bald Eagle reintroduction program. The pair successfully fledged one offspring.

• Nesting chronology information was not obtained for Stafford County, Jefferson County and Sebelius Reservoir.

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ERRATA

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