BULLETIN OF THE
OKLAHOMA ORNITHOLOGICAL SOCIETY
VOL. 47 JUNE 2014 NO. 2

FIRST DOCUMENTED OBSERVATION OF THE FEDERALLY ENDANGERED GOLDEN-CHEEKED WARBLER (*Setophaga chrysoparia*) IN OKLAHOMA

ASHLEY M. LONG[1,4], DREW S. FINN[1], JOSEPH A. GRZYBOWSKI[2], MICHAEL L. MORRISON[3], AND HEATHER A. MATHEWSON[1]

[1]Institute of Renewable Natural Resources, Texas A&M University,College Station, TX 77843; [2]College of Mathematics and Science, University of Central Oklahoma, Edmond, OK 73034; [3]Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843; [4]Corresponding author. Email: ashley.long@ag.tamu.edu

Abstract—The Golden-cheeked Warbler *(Setophaga chrysoparia)* is a federally endangered songbird that breeds exclusively in central Texas. There are few recorded observations of Golden-cheeked Warblers outside their breeding and wintering ranges or migration route. We provide the first documented detection of this species at the Wichita Mountains Wildlife Refuge in southwestern Oklahoma.

INTRODUCTION

In May 2013, we observed a male Golden-cheeked Warbler *(Setophaga chrysoparia*; hereafter warbler) at the Wichita Mountains Wildlife Refuge in southwestern Oklahoma. We conducted a comprehensive search of national, regional, and state scientific publications, Oklahoma birding references (Reinking 2004, OBS 2009, OBRC 2011), catalogued museum specimen records (OBS 2014, SNOMNH 2014), and citizen science checklist submissions (Sullivan *et al.* 2009) and found no evidence of this species in Oklahoma. Herein, we provide the first documented detection of a Golden-cheeked Warbler in the State.

This federally endangered species is a medium-sized, insectivorous songbird that breeds exclusively on the eastern half of the Edwards Plateau and the southern half of the Cross Timbers Ecoregions in central Texas (USFWS 1990; Ecoregions as delineated by Griffith et al. 2007). Breeding habitat for the warbler is restricted to late-successional woodland that includes oaks (*Quercus* spp.) and Ashe juniper (*Juniperus ashei*) (Pulich 1976, Ladd and Gass 1999). This is because mature (>20 years) Ashe juniper provides necessary nesting material, nesting sites and song perches, and a combination of hardwoods and Ashe juniper provide important foraging substrates for warblers (Pulich 1976, Wahl *et al.* 1990, Marshall *et al.* 2013). Loss and degradation of oak-juniper woodland throughout the 20th century precipitated this warbler's population decline (USFWS 1990). Clearing of Ashe juniper for range management, or urban development, and subsequent lack of oak recruitment were particularly problematic for this species. Oak wilt, an

infectious disease caused by the fungus, *Ceratocystis fagacearum*, that causes oak defoliation, may negatively affect warblers in the near future (Stewart *et al.* 2013).

There are few recorded observations of Golden-cheeked Warblers outside their breeding and wintering ranges or migration route. Published accounts include an adult male on St. Croix, Virgin Islands in November 1939 and January 1940 (Beatty 1943), an immature male in Pinellas County, Florida in August 1964 (Woolfenden 1967), and an immature male in San Francisco County, California in September 1971 (Lewis *et al.* 1974). The Texas Bird Records Committee additionally accepted documentation of two warbler detections at Galveston Island in August 1977 (Lasley 1990) and Aransas National Wildlife Refuge in July 1999 (Lockwood 2001). Finally, there are several such warbler detections recorded on eBird, an online checklist program developed and maintained by the Cornell Laboratory of Ornithology and National Audubon Society (Sullivan *et al.* 2009). Almost all anomalous eBird warbler detections occurred in Texas during spring (March) or fall (July/August) migration and represent plausible observations. The most recent U.S. warbler detection submitted on eBird outside Texas other than ours included photographic evidence of an adult male warbler present in St. Louis County, Missouri, for at least four days in April 2013. Our record adds to our limited documentation of Golden-cheeked Warblers outside their breeding or wintering ranges or migration route.

OKLAHOMA RECORD

On 6 May 2013, D. Finn heard an adult male Golden-cheeked Warbler singing at the Wichita Mountains Wildlife Refuge, Comanche County, Oklahoma. This refuge is ~200 km north of the nearest breeding warblers in Palo Pinto County, Texas. The individual warbler was located at ~1145 hrs within the Quanah Creek basin, ~350 m to the north of one of our research program's Black-capped Vireo (*Vireo atricapilla*) study sites on the refuge. Due to logistics, Finn was not able to immediately follow-up on the detection, but on 11 May 2013, Finn returned with colleague M. Critean to obtain additional evidence at this location. The two observers detected the male by song shortly after 0700 hrs and were able to reposition themselves ~10 m away from the individual by 0717 hrs. Finn and Critean confirmed their identification of the bird by sight using binoculars. They then observed the bird for 20 min (0717-0737 hrs), during which time the warbler flew ~325 m north along the ~150 m wide Quanah Creek basin. Finn and Critean recorded GPS point locations on the male and took photographs of the individual as he foraged. No counter-singing males responded to the vocal individual and there were no females detected at this location. Finn and Critean returned on 15 May 2013 and were unable to relocate the warbler. Subsequent visits to our Black-capped Vireo study site through August

2013 yielded no additional detections.

Finn described their observations in a document submitted with photos to the Oklahoma Bird Records Committee for review and inclusion of the Golden-cheeked Warbler on the Oklahoma Ornithological Society's official Check-list of Oklahoma Birds. Finn indicated that the individual was about the same size as a Black-and-white Warbler (*Mniotilta varia*) with an insectivorous bill, very conspicuous yellow face, and black eye-line. She also indicated that the bird had a solid black chin, throat, crown, and back, visual characteristics used in the field to differentiate Golden-cheeked Warblers from a closely-related species, the Black-throated Green Warbler (*Setophaga virens*). Finn described the individual's "A-song" as a series of quickly ascending, buzzy notes (e.g., *ter-wih-zeee-e-e-e, chy*). She indicated that this was notably different from the song of the Black-throated Green Warbler, which consists of several repeated notes with two different pitches (e.g. "*zee-zee-zee-zee-zee-zoo-zee*"); the next to last syllable, "zoo", being the lowest pitched tone. This record received five positive votes by the Oklahoma Bird Records Committee to approve the species as "Hypothetical" (as defined in OBRC 2009) on the State Check-list. This categorization is given to species supported only through accepted written and/or sound documentation, and where no specimen or independently identifiable photographs exist (OBRC 2009).

VEGETATION MEASUREMENTS

For descriptive purposes, we recorded general vegetation measurements for trees (woody plant > 2 m) and shrubs (woody plant < 2 m) at sampling points located along a 200 X 200 m grid within the Quanah Creek riparian zone and within adjacent vegetation (i.e., outside the riparian area where the warbler was detected). At each vegetation sampling point, and at points located 5 m from the grid point in each cardinal direction, we recorded percent canopy cover and canopy height for the three dominant tree species present. We then established a 5-m radius circle around the center point and divided the circle into 4 quadrants based on the four cardinal directions. Within each quadrant, we estimated percent shrub cover of the three dominant woody species present, percent herbaceous cover, and percent bare ground.

Plant species recorded within the riparian zone, where we observed the warbler, included blackjack oak (*Q. marilandica*), post oak (*Q. stellata*), eastern red cedar (*Juniperus virginiana*), slippery elm (*Ulmus rubra*), coralberry (*Symphoricarpos orbiculatus*), and hackberry (*Celtis occidentalis*). Average canopy cover at points located within the riparian zone was 43% (20% eastern red cedar, 11% post oak, 7% snag, and 5% blackjack oak). Canopy height measurements ranged from 3-9 m. Average canopy height was 5.7 m (post oak 7.6 m, eastern red cedar 6.6 m, snag 5.5 m, blackjack oak 3 m). Within the riparian zone, average shrub cover was 25% (15% blackjack oak; < 3% hackberry, snag, eastern

red cedar, slippery elm, coralberry), average grass cover was 38%, and average bare ground was 31%. In the adjacent vegetation, blackjack oak was the only plant species recorded at sampling points. We recorded no canopy cover in the adjacent vegetation, which is common for areas outside riparian zones at the refuge. Average shrub cover was 23%, average grass cover was 26%, and average bare ground was 37%.

DISCUSSION

Golden-cheeked Warblers breed exclusively in mature stands of Ashe juniper woodland in central Texas. Percent canopy cover within occupied stands is generally >50% (Wahl et al. 1990, Ladd and Gass 1999), but warblers will use and breed in Ashe juniper stands with <50% canopy cover, particularly in the southwestern portion of their breeding range (Klassen et al. 2012). The vegetation used by the warbler we detected in Oklahoma was structurally similar to woodland stands occupied by warblers in their breeding range, but did not include an Ashe juniper component. Though the individual was present for at least six days, there was no indication that the male remained at this location for the course of the breeding season or that any other individuals (male or female) occupied this location during the breeding season. Given the timing and duration of our warbler detection along Quanah Creek at the Wichita Mountains Wildlife Refuge, it is likely that the male we found in Oklahoma made a navigational error or was blown off course during migration.

ACKNOWLEDGMENTS

Funding was provided by the Joint Fire Science Program, a multiagency and development partnership formed to conduct research on all aspects of fire science. Our study was supported by the U.S. Fish and Wildlife Service's Wichita Mountains Wildlife Refuge. We thank M. Critean for his contributions to our program's research. We also thank Sebastian Patti and two anonymous reviewers for their comments on this manuscript.

LITERATURE CITED

Beatty, H. A. 1943. Records and notes from St. Croix, Virgin Islands. Auk 60: 110–111.

Griffith, G. E., S. A. Bryce, J. Omernik, and A. Rogers. 2007. Ecoregions of Texas. Texas Commision on Environmental Quality. Austin, Texas, USA.

Klassen, J. A., M. L. Morrison, H. A. Mathewson, G. G. Rosenthal, and R. N. Wilkins. 2012. Canopy characteristics affect reproductive success of golden-cheeked warblers. Wildlife Society Bulletin 36:54-60.

Ladd, C. G., and L. Gass. 1999. Golden-cheeked Warbler (*Dendroica chrysoparia*) in The Birds of North America Online, No. 420. (A. Poole, ed.). Cornell Lab of Ornithology, Ithaca, New York, USA.

Lasley, G. W. 1990. Texas Bird Records Report for 1990. <http://www.texasbirds.org/tbrc/AR1990.htm> Accessed 29 July 2014.

Lewis, T. J., D. G. Ainley, D. Greenberg, and R. Greenberg. 1974. A golden-cheeked warbler on the Farallon Islands. Auk 91:411–412.

Lockwood, M. W. 2001. Texas Bird Records Committee Report for 2001. <http://www.texasbirds.org/tbrc/ar2001.html> Accessed 29 July 2014.

Marshall, M. E., M. L. Morrison, and R. N. Wilkins. 2013. Tree species composition and food availability affect productivity of an endangered species: the golden-cheeked warbler. Condor 115:882-892.

Oklahoma Bird Records Committee [OBRC]. 2009. Date Guide to the occurrences of birds in Oklahoma. Fifth Edition. Oklahoma Ornithological Society, Norman, Oklahoma, USA.

Oklahoma Bird Records Committee [ORBC]. 2011. The Oklahoma Ornithological Society Checklist of Oklahoma Birds. 4th edition. Oklahoma Ornithological Society, Norman, Oklahoma, USA.

Oklahoma Biological Survey [OBS]. 2009. Checklist of Oklahoma Birds. <http://www.biosurvey.ou.edu/biodiver.html> Accessed 30 July 2014.

Oklahoma Biological Survey [OBS]. 2014. Oklahoma Bird Specimen Records: Collections Database. <http://www.biosurvey.ou.edu/dbsrch/birdform.php> Accessed 30 July 2014.

Pulich, W. M. 1976. The Golden-cheeked Warbler: A Bioecological Study. Texas Parks and Wildlife Department. Austin, Texas, USA.

Reinking, D. L. 2004. Oklahoma Breeding Bird Atlas. University of Oklahoma Press, Norman, OK, USA.

Sam Noble Oklahoma Museum of Natural History [SNOMNH]. 2014. Division of Ornithology: Database of Birds. <http://www.snomnh.ou.edu/db2/ornithology/index.php> Accessed 30 July 2014.

Stewart, L. R., M. L. Morrison, M. R. Hutchison, D. N. Appel, and R. N. Wilkins. 2013. Effects of a forest pathogen on habitat selection and quality for the endangered golden-cheeked warbler. Wildlife Society Bulletin 38:279-287.

Sullivan, B. L., C. L. Wood, M. J. Iliff, R. E. Bonney, D. Fink, and S. Kelling. 2009. eBird: a citizen-based bird observation network in the biological sciences. Biological Conservation 142:2282-2292.

U.S. Fish and Wildlife Service [USFWS]. 1990. Final rule to list the golden-cheeked warbler as endangered. Federal Register 55:53153-53160.

Wahl, R., D. D. Diamond, and D. Shaw. 1990. The golden-cheeked warbler: a status review. Austin, Texas, USA.

Woolfenden, G. E. 1967. A specimen of the golden-cheeked warbler from Florida. Auk 84:115.

Received 14 March 2014; accepted 25 July 2014.

COWBIRD PARASITISM OF BLACK-THROATED SPARROW IN OKLAHOMA—On 27 June 2009, a party consisting of John S. Shackford, Jack D. Tyler, Warren D. Harden, and Ronald D. Harden, while exploring for birds in arid pastureland dominated by mesquite (*Prosopsis juliflora*) and scattered juniper (*Juniperus monosperma*) trees, discovered the nest of a Black-throated Sparrow (*Amphispiza bilineata*) two miles ENE of Kenton, at the west end of the Oklahoma Panhandle, Cimarron County. The nest was placed 31.5 inches (0.8 m) up in the fork of a six-foot (1.8 m) tall cholla cactus (*Opuntia arborescens*) and contained a fully-feathered young Brown-headed Cowbird (*Molothrus ater*) (Figure 1), about ready to fledge. Nearby was perched a young sparrow that had apparently just fledged (Figure 2), or may have been evicted by the cowbird chick. The adult sparrows were attending both chicks.

Figure 1. Young Brown-headed Cowbird (*Molothrus ater*) in Black-throated Sparrow's (*Amphispiza bilineata*) nest two miles ENE of Kenton, Cimarron County, Oklahoma, 27 June 2009. Photograph by Ronald D. Harden.

Figure 2. Adult Black-throated Sparrow (*Amphispiza bilineata*) feeding a fledgling two miles ENE of Kenton, Cimarron County, Oklahoma, 27 June 2009. Photography by Ronald D. Harden.

The following morning, we returned to find the nest empty. In a large bush several feet away, the parent birds were busily feeding the young cowbird, but the Black-throated Sparrow chick was nowhere in sight. At successful intervals of 8, 12, 11, 4, 11, and 12 minutes, we watched the adult sparrows bring food to their parasitic "offspring."

According to *Oklahoma Birds* (1967, Univ. Oklahoma Press, Norman, p. 618), G.M. Sutton was unaware of any previous documentation for cowbird parasitism of the Black-throated Sparrow in Oklahoma. This phenomenon has been described, however, in Texas, New Mexico, and Arizona (Johnson, M.J., C. Ripper III, and K.M. Pearson. 2002. Black-throated Sparrow [*Amphispiza bilineata*]. *In* Birds of North America No. 637 [A. Poole and F. Gill, Eds.], The Birds of North America Inc., Philadelphia, PA).

We would like to thank three anonymous reviewers for comments to help improve the manuscript.

JACK D. TYLER, *903 NW Cheryl Pl., Lawton, OK 73505;* JOHN S. SHACKFORD, *429 E. Oak Cliff Dr., Edmond, OK 73034;* WARREN D. HARDEN, *P.O. Box 720155, Norman, OK 73070; and* RONALD D. HARDEN, *3125 Elevado Ct., Loveland, CO 80538.*

Submitted 20 February 2014; accepted 7 July 2014.

WOOD THRUSH (*Hylocichla mustelina*) IN CIMARRON COUNTY, OKLAHOMA—On 10 May 2014, at about 3:30 PM, while John S. Shackford and I were searching for birds along a dry cottonwood-tamarisk bordered streambed on the north side of the Cimarron River, we came upon a Wood Thrush (*Hylocichla mustelina*). Our location was 2.5 miles NNE of Kenton, Cimarron County, near the westernmost limit of the Oklahoma panhandle. It appeared robin-sized when first seen as it flew up low and just in front of us, keeping to the cover of the shady undergrowth. Rather tame, it never alighted very far ahead. For about 10 minutes, we cautiously pursued it, attempting to get definitive looks. When we finally did, we could see its uniformly colored brownish back with a more reddish cast to the crown, nape, and upper back. The bird was noticeably larger than a Hermit Thrush (*Catharus guttatus*), and lacked the rust-red tail of that species. Perhaps most distinguishing of all was the white underside, covered with large dark spots. The legs were a pinkish-flesh color. No vocalization was heard.

Wood Thrush is a species of eastern deciduous forest, already uncommon in eastern Oklahoma, and occurring sparingly to central and west-central areas, formerly the Caddo canyonlands, with migrant and summer records also westerly to Comanche and Alfalfa counties (Baumgartner F.M., and A.M. Baumgartner 1992. Oklahoma Bird Life. Univ. Oklahoma Press, Norman, pp. 284-285; Tyler, J.D. 2005. Birds of Southwestern Oklahoma and North-central Texas. Transcript Press, Norman, Oklahoma, p 82.). There is only one previously known occurrence in the Oklahoma Panhandle, that in Cimarron County: John S. Weske collected a female (UOMZ 5894) there on 13 May 1966 (Sutton, G.M., 1967. Oklahoma Birds. Univ. Oklahoma Press, Norman, p. 432.). In extreme southwestern Kansas, Morton County, five records range from 3-25 May, with the most recent in 2004 (Cable, T.T., and S. Seltman 2011, Birds of Cimarron National Grassland. Kansas Agricultural Experiment Station Publ. 10-3.90-B, p. 99.). It is also a rare vagrant in Colorado and New Mexico (Evans, M., E. Gow, R.R. Roth, M.S. Johnson and T.J. Underwood. 2011. Wood Thrush (*Hylocichla mustelina*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/246.).

I would like to thank two anonymous reviewers and Eugene A. Young for their suggestions to improve this manuscript. Max C. Thompson kindly provided data from the Kansas Birds database.

JACK D. TYLER, *903 NW Cheryl Pl., Lawton, OK, 73505.*

Received 3 July 2014; accepted 1 August 2014.

The *Bulletin of the Oklahoma Ornithological Society* (ISSN 0474-0750) is published quarterly in March, June, September, and December at Tonkawa, OK. Editor, EUGENE A. YOUNG, Agriculture, Science, and Engineering Division, Northern Oklahoma College, 1220 E Grand, PO Box 310, Tonkawa, OK 74653-0310, (eugene.young@noc.edu).