

# BULLETIN OF THE OKLAHOMA ORNITHOLOGICAL SOCIETY

VOL. 31

MARCH 1998

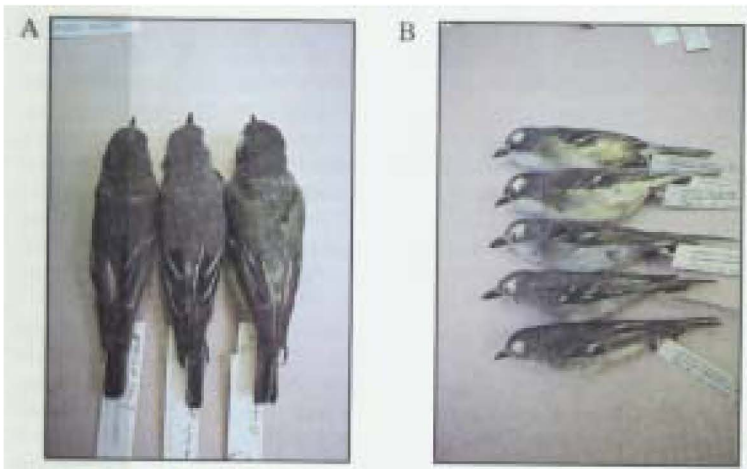
No. 1

*Bull. Oklahoma Ornithol. Soc.* 31:1-5, 1998

## Status of the Solitary Vireo complex in Oklahoma: Two "new" species for Oklahoma

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The taxonomic status of the Solitary Vireo (*Vireo solitarius* Wilson) was recently revised (American Ornithologists' Union 1997) mostly on the authority of cytochrome-b sequence studies by Murray et al. (1994) and allozyme-variation studies of Johnson (1995). The four subspecies previously recognized were divided among three sister species: (1) *V. s. solitarius*, the eastern and northern form, and *V. s. alticola*, the Appalachian form, are retained, but under the English name of Blue-headed Vireo; (2) the Rocky Mountain–Great Basin form is elevated to specific status as *V. plumbeus* Coues, the Plumbeous Vireo; and (3) the Pacific Coast form is now *V. cassinii* Xantus, the Cassin's Vireo.



**Fig. 1.** Spring specimens of "Solitary" Vireos taken in Oklahoma: (A, left to right), Cassin's, Plumbeous, and Blue-headed vireos (all females); (B, upper to lower), male Blue-headed, female Blue-headed, male Plumbeous, female Plumbeous, and female Cassin's vireos.

The Blue-headed Vireo is the predominant species in Oklahoma, occurring as an uncommon (eastern) to rare (western) migrant in the main body of the state (Sutton 1967). It is also rare during winter in extreme southeastern Oklahoma (Oklahoma Bird Records Committee [OBRC] files [B. Heck, pers. obs.]). Specimens have been taken as far west in the state as eastern Beaver County (Sutton 1967). All have been of the nominate form, *V. s. solitarius*. One documented sighting of a Blue-headed Vireo exists for Cimarron County in the western Panhandle, 21 September 1997 (by J. Sterling and J. Woodard).

Five specimens of the Plumbeous Vireo and three of Cassin's Vireo have been taken in Oklahoma, all in northwestern Cimarron County. These forms were recognized as occurring in Oklahoma by Sutton (1967); specimens examined by Sutton (1967) and taken since are listed in Table 1. Their current distinction adds these species to the state list maintained by the Oklahoma Bird Records Committee (1997).

The proximity of the Rocky Mountain breeding areas of the Plumbeous Vireo would suggest that it should occur as a migrant in the extreme western Panhandle of Oklahoma. However, the migratory status of Cassin's Vireo away from the Pacific states and provinces is less predictable, although part of this species' apparent migration path includes the Rocky Mountains (Bent 1950). Both Plumbeous and Cassin's vireos winter in the interior and Pacific slope of Mexico (Howell and Webb 1995) north to southern California (Heindel 1996).

Cassin's Vireos have been collected in the Trans-Pecos of Texas (Oberholser 1974) and in southwestern Kansas (Graber 1954). Two specimens were obtained during September 1911 by J. T. Zimmer in Dawes County, northwestern Nebraska (University of Nebraska State Museum, R. Silcock, pers. comm.). In Colorado, Cassin's Vireo is considered a casual fall migrant and accidental spring migrant mostly on the eastern plains, with nine fall and one spring specimens (Andrews and Righter 1992). However, a specimen and several documented sight records of the Blue-headed species also exist for Colorado. Only a handful of vagrant Cassin's Vireos have been documented east of the western Great Plains, although there are records as far east as Quebec and Massachusetts (Heindel 1996).

Spring migrants of Plumbeous Vireos have been collected in Cimarron County, Oklahoma, from 8–14 May; four of the five specimens were obtained during May 1961, and three of these five were yearling males (Table 1). The only spring specimen of Cassin's Vireo was a yearling female obtained on 14 May 1961 (Table 1). Sight records of unspecified "Solitary" Vireos exist for 22 and 23 April, and 13 and 27 May in Cimarron County (Sutton 1982, Baumgartner and Baumgartner 1992). Migrant Blue-headed Vireos have been observed in the main body of the state from 20 April (probable migrant 19 April in McCurtain County) to 29 May (Sutton 1982, OBRC files), overlapping records for the other species entirely.

Table 1. Specimens of Plumbeous and Cassin's vireos taken in northwestern Cimarron County, Oklahoma.

Species Sex-age*	OMNH Collector	Specific locality	Date
Plumbeous	6666	Kenton (13 km E)	8 May 1970
M-yearling	G. M. Sutton		
Plumbeous	4887	Kenton (14.5 km E)	12 May 1961
M-yearling	J. D. Ligon		
Plumbeous	4813	Boise City (21 km N)	14 May 1961
M-yearling	G. M. Sutton		
Plumbeous	4820	Boise City (21 km N)	14 May 1961
M- > 1 yr	W. M. Davis		
Plumbeous	4885	Regnier Ranch	11 May 1961
F- > 1 yr	J. D. Ligon		
Cassin's	4821	Boise City (21 km N)	14 May 1961
F-yearling	J. P. O'Neill		
Cassin's	7456	Boise City (24 km NW)	19 August 1973
F-immature**	W. A. Carter		
Cassin's	5259	Boise City (21 km N)	29 August 1963
F-immature***	G. M. Sutton		

\*specimens aged on basis of edge wear and tone differences between primary coverts and greater wing coverts (see Pyle et al. 1987).

\*\*originally identified as *V. s. solitarius*, but identical in plumage to OMNH 5259.

\*\*\*originally aged as adult because skull believed pneumatized, although badly damaged during collection; plumage features almost identical to OMNH 7456, but not OMNH 4821.

The two fall records of Cassin's Vireo were obtained on 19 and 29 August (Table 1). One is considered an immature female. The second, although aged as an adult, is more likely also an immature; skull damage did not allow clear appraisal of pneumatization (OMNH 5259), and it is a female in almost identical plumage to the first. No fall records of Plumbeous Vireos are known for Oklahoma, although a "Solitary" Vireo of unspecified type was observed on 2 September 1965 about 21 km north of Boise City by G. M. Sutton (Sutton 1982).

The earliest Blue-headed Vireo specimen for the fall was collected 12 September 1975 in Cleveland County by D. S. Wood, although sight records for "Solitary" Vireos in the main body of the state begin as early as 1 September (exceptionally 19 August, 1995, Tulsa County, by P. Seibert), with a number of sightings by 7 September (Sutton 1982, Baumgartner and Baumgartner 1992, OBRC files, pers. obs.). One observed in Harper County, northwestern Oklahoma, on 6 September 1958 by G. M. Sutton was of unspecified type. Fall dates (outside extreme southeastern Oklahoma) generally extend to late October, with the latest being 11 (1973,

Comanche County, by J. McGee) and 27 November (1988, Osage County, by J. Cox; Sutton 1982, OBRC files). While the fall data for Cassin's Vireos are anecdotal, the dates for the two fall specimens are consistent with the notion that Cassin's migrates before the Blue-headed Vireo in the fall (Heindel 1996). Migration times of these species may still overlap extensively, however, particularly in September (see Andrews and Righter 1992).

Plumage and bill characteristics distinguishing these species are summarized extensively by Heindel (1996). Blue-headed Vireos generally are the brightest in coloration and show the sharpest contrasts in plumage colors (white throat and spectacles, gray head and olive-green back) while the generally larger-billed Plumbeous Vireo is more uniformly gray on its upperparts and sides (Fig. 1). Cassin's Vireo is effectively duller than the Blue-headed Vireo with less contrast and less distinct borders between the gray auricular and whitish throat, and between the green-gray nape and gray-green back (Fig. 1). The sides of the Cassin's Vireo are typically greenish, but they can range from dull yellow to grayish-olive; Plumbeous Vireos are never yellowish or greenish near the bend of the wing, although all Oklahoma specimens show vague tints of olive-green in the flanks. Gray Vireos (*V. vicinior*), which have been recorded in Oklahoma (Sutton 1967), are similar to Plumbeous Vireos, but are readily separated by their complete eye-ring and pale gray lores rather than white (or whitish) spectacles interrupted in front of the eye by a dark line.

Assessing the status of the migrant Cassin's Vireo in the Great Plains has been problematic because of this species' previous subspecific classification, its intermediate plumage characters relative to Blue-headed and Plumbeous vireos, and the potentially overlapping presence of its sister species. Many field observers have not differentiated previous forms or documented most records of non-Plumbeous types.

Although typical individuals of these three vireo species are distinctive, most characters need some level of subjective interpretation. Fall immatures and worn spring individuals are particularly difficult to identify. Variation caused by age, sex, molt, and plumage-wear patterns within the relatively limited plumage tone and color boundaries for these species enhances the potential for error. Heindel (1996), after his discourse on separating features, added the caveat that "a review of specimens convinced me that some birds cannot be identified confidently in the field." To this caution, one might notice that the bird labeled in Farrand's (1983) *Master Guide to Birding* as the "Rocky Mountain race" (i.e., *V. plumbeus*) has a subtle olive-green wash to its back and sides at bend of wing, and is thus actually a Cassin's Vireo (see Heindel 1996). In addition, one of the Cassin's Vireo specimens for Oklahoma was originally identified as *V. s. solitarius*. Thus, the future status of these newly recognized vireo species should be established with specimens, photographs, or careful observations and detailed written documentation.

James Hoffman, Gary Schnell, and John Tomer provided comments useful in improving this manuscript.

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