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**AN ANALYSIS OF ADDITIONS TO THE LIST OF BIRDS  
RECORDED IN OKLAHOMA**

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*Abstract.*—Since Nice's (1931) early account of the birdlife of Oklahoma, >120 species of birds have been added to the state list. We analyze the seasonality, annual variation, geographic distribution, and provenance of these recent additions. Extensive work in the westernmost part of Oklahoma's Panhandle accounts for many additions, although large population centers at Tulsa and Oklahoma City also accounted for a disproportionate amount of the total. Most additions are from migration (especially May and September) and early winter, with relatively few from late winter and mid-summer. Prior to the 1970s, most additions were of breeders in eastern North America that are scarce migrants in Oklahoma. A large proportion of additions throughout the period have been breeders in western and southwestern North America. Only since the 1970s has a substantial proportion of additions been of Eurasian species.

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*Introduction.*—Relative to the exploration of many other states, ornithological exploration of Oklahoma has been recent. For example, it was not until the 1920s that the first survey of the Panhandle's avifauna—an account of 124 species, most supported by specimen evidence (Tate 1923)—and the first comprehensive, well-researched summary of the state's avifauna (Nice and Nice 1924) were published. The statewide compendium was followed by a more detailed revision a few years later (Nice 1931). Since that revision, >120 species of birds have been added to Oklahoma's list. In the spirit of Jehl's (1980) early analysis of trends in California's state list of birds, it seems appropriate to take a look back at trends in Oklahoma's state list since Nice (1931).

The analyses herein are broad, with emphases on biogeographic provenance of new species, regions in the state where records have tended to accumulate, and timing of those new records. Such analyses can be enlightening when attempting to determine the state's remaining "frontiers," to trace the evolution of field skill, or perhaps to glimpse the beginnings of community-wide shifts in range.

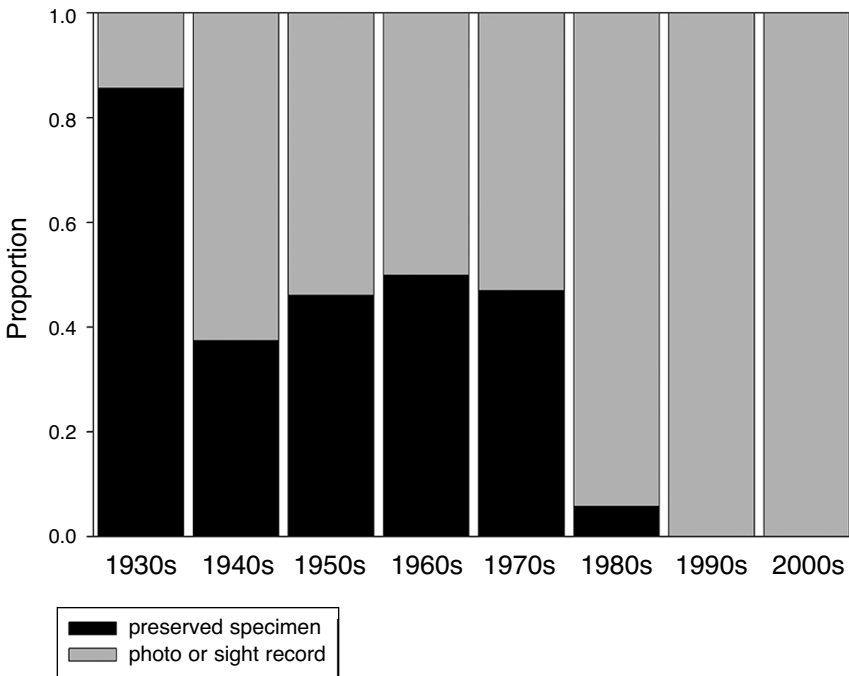
**Trends in Documenting Records**

From the time of early American ornithologists such as Audubon and Wilson well into the 20th century, collecting specimens with firearms was the principal

method of documenting presence of a species within a given area. Initially all species, rare or common, were sampled and typically were stored in university or other museum collections. As the need for duplicate specimens diminished, efforts focused on securing examples of species not yet recorded in a state or region, with a carefully archived study skin representing the gold standard in verification and documentation.

The evolution of the Christmas Bird Count from the annual holiday “side hunts” to an activity based on observation rather than consumption marked a significant shift in the study of birds. Subsequent advancements in field guides from the likes of Roger Tory Peterson, along with improved optical equipment, revolutionized bird study in the early and mid 20th century, albeit collecting specimens was still widely practiced and important. In recent decades, underfunded museums often do not actively seek new specimens, long time collectors have been replaced by a new generation less inclined to collect, and the well-connected network of birders eager to see unusual birds now makes collecting rarities more controversial and more rare.

Oklahoma’s ornithological history follows a similar pattern, with specimens dominating Oklahoma first state records of the 1930s and remaining a significant proportion of total firsts through the 1970s (Fig. 1). Many besides the indefatigable George Miksch Sutton produced small collections over the years, but it is not by chance that Sutton’s death in 1982 coincided with a dramatic reduction in the proportion of first



**Fig. 1.** Proportion of first records for Oklahoma, by decade, since Nice (1931) documented by a specimen or by other means. The sharp decline in specimen-supported firsts after the 1970s coincides with an increase in birding’s popularity.

state records verified by specimens (Fig. 1). Indeed, the only first state record documented by a specimen since the 1970s is the Black Scoter (*Melanitta nigra*), 2 of which were shot by a waterfowl hunter in 1985 (Carden and Rushing 1987).

Beginning in the 1980s, sight records and photographs have risen to the forefront of rarity documentation. Sight records in particular can be difficult to evaluate and reach consensus on, hence the Oklahoma Bird Records Committee's (2004) role in this regard. If specimens are the gold standard for documenting rarities and firsts, photos are next in line for their capacity to provide durable, accessible, physical evidence of the identity and occurrence of a bird. In recent years, a revolution has occurred in the way rare birds are photographed. An investment of thousands of dollars for heavy telephoto lenses and copious rolls of film is no longer needed; instead, supplementing the spotting scope and computer already owned by most birders, a small, modestly priced point-and-shoot digital camera can be held up to a scope (or even binoculars) and achieve levels of magnification (although not image quality) much greater than with traditional photography equipment, enabling identifiable photos to be taken from extremely long ranges. The economy and convenience provided by this new technology means that a large percentage of birders are ready and able to document their sightings much more substantively than with a written description, and they can do so without depriving subsequent observers of the chance to see a rarity.

### Oklahoma Firsts

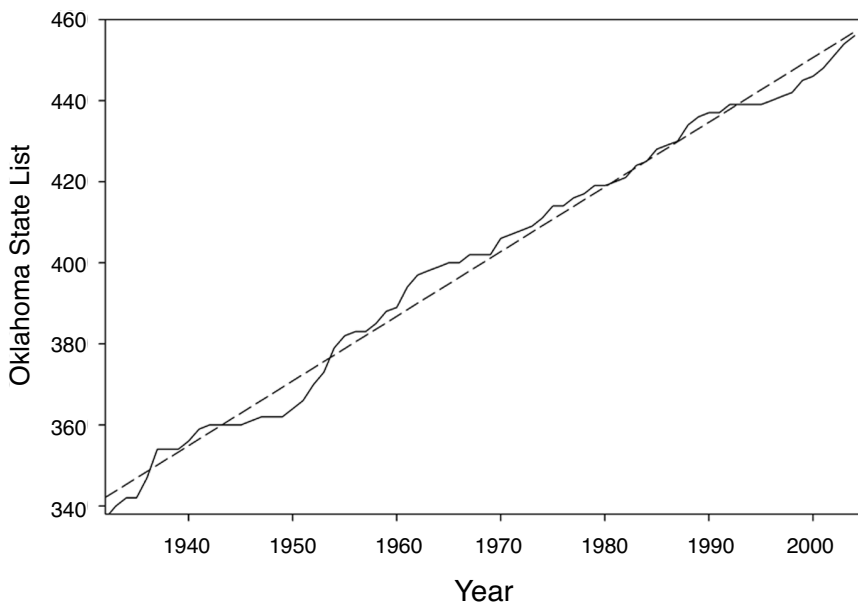
Although often a straightforward task, determining a particular species' first occurrence in Oklahoma can be difficult, especially if an incorrect identification is made and erroneous information is published and thereafter perpetuated. For example, Withgott (1992) noted that early records of the Black-headed Gull published by Sutton (1967) were, years later, judged to be inconclusive or determined to be of a Franklin's Gull (*L. pipixcan*), an abundant migrant through the state. Likewise, published details (Tomer 1970) for the earliest Oklahoma claim of an Iceland-type Gull (*L. glaucoides* or *L. [g.] thayeri*), a record listed in Baumgartner and Baumgartner (1992), suggests that the bird was a Glaucous Gull (*L. hyperboreus*), likely the "small" subspecies (*L. h. barrovianus*) (Banks 1986).

Sutton's (1967) detailed compendium was invaluable, although he tended to accept sight records after an Oklahoma specimen had been secured. Baumgartner and Baumgartner (1992) were looser still in their inclusion of sight records, to the extent of being uncritical of most that had managed to find their way into the literature, provided the species had been documented at least once. In this regard, it is good to recall this sage remark from the American Ornithologists' Union (1998:xiii): "We note that a properly verified record of a species does not validate either earlier or later poorly documented or undocumented sight reports." Herein we nonetheless followed Nice (1944), Sutton (1967), or Baumgartner and Baumgartner (1992) if the first record they listed seemed reasonable to us on the basis of present knowledge. For species whose field identification has advanced only relatively recently (e.g., shorebirds, gulls, sparrows), we have been more cautious in assigning the first in that we generally went with the earliest specimen record or, in a few cases, an early record documented by a photograph.

The vetting of sight records has never been an easy task, and it skirts the edge of the scientific process because it so thoroughly depends on the veracity, skill, and knowledge of the observer and reviewers and the extent to which written documentation and sketches are of sufficient detail. With respect to veracity, very few observers lie outright or consciously embellish details, but everyone makes honest mistakes, many of which creep into written documentation unconsciously. The formation of the Oklahoma Bird Records Committee (OBRC) has made the task of summarizing vetted records easier. Like any such committee, it is designed to peer review bird records as a means of endorsing which of them should be considered among the pool of scientifically valid data for a given region. The OBRC adds species to the state list only if physical evidence—a specimen or suitable photograph—supports  $\geq 1$  record. For more recent additions, we followed the OBRC without exception for everything on the main list, but we also included in our analyses a few species that the OBRC has accepted as hypothetical—sight record(s) only—if published documentation convinced us of the record's validity (e.g., Kaufman 1971, Heck and McMahon 2005).

### Trends in the State List

Since 1931, Oklahoma's state list has increased at a fairly steady rate of about 3 new species every 2 years (Fig. 2), or about 1.5 species/year. Sutton's expeditions to the Panhandle in the 1930s and 1950s generated small spikes during those decades (2.6 species/year), and the effect of World War II probably explains the dip

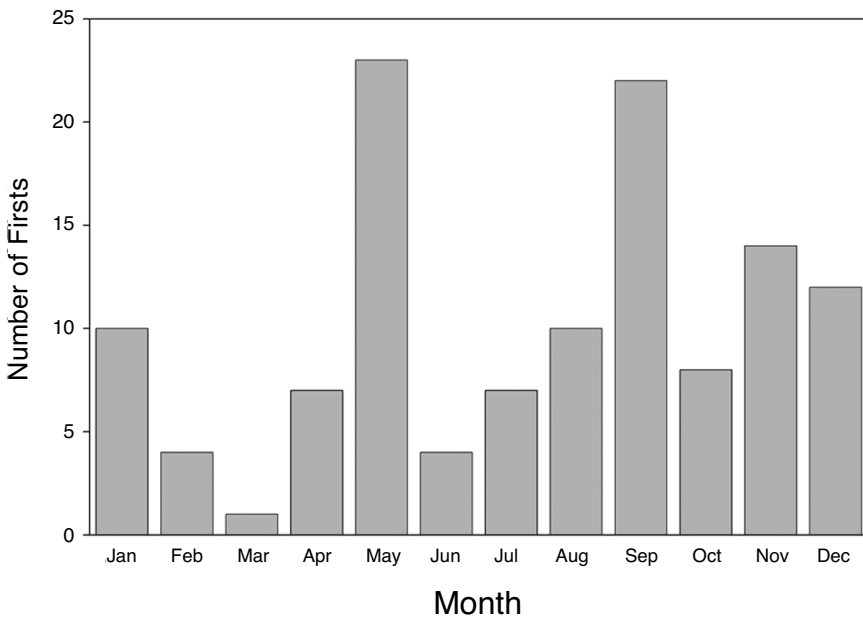


**Fig. 2.** Species accumulation (solid line) on Oklahoma's state list since Nice (1931). Apart from shallow spikes in the 1930s and 1950s and shallow dips in the 1940s and 1990s, accumulation essentially has been linear (dashed line;  $r = 0.99$ ) at a mean rate of 1.59 species/year.

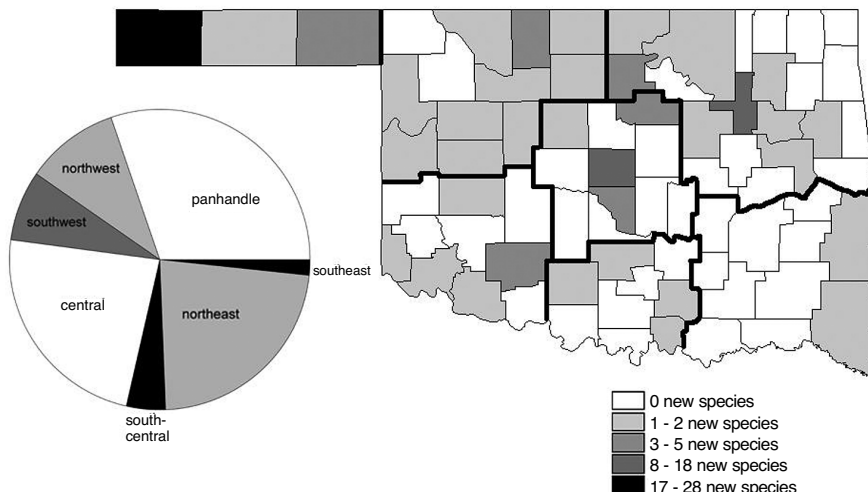
during the 1940s (0.8 species / year). A similar dip in the 1990s (0.9 species / year) cannot be explained so readily. Most Oklahoma firsts have been found initially during periods of peak migration, particularly in May and September (Fig. 3), although a number of them have been found in early winter (generally late November–mid-January). Late winter (February–March) and mid-summer (June–mid-July) have been particularly poor periods for new species (Fig. 3).

The Panhandle and particularly the Black Mesa area, which has unique habitat and avifauna compared with the remainder of the state, have yielded the most firsts since 1931 (Fig. 4). By contrast, another part of the state with unique habitat and avifauna, the Red Slough area and nearby Ouachita Mountains, has added almost no firsts (Fig. 4). Indeed, and not surprisingly, the 2 other regions with sizeable contributions to the total are the central and northeast (Fig. 4), which, respectively, contain the large metropolitan areas of Oklahoma City and Tulsa and thus are home to numerous birders. It also does not hurt that each area has quality locales that concentrate birds, particularly Lake Hefner in Oklahoma City and Mohawk Park in Tulsa. The central region also has the advantage of being home to the University of Oklahoma, where Sutton, Nice, and other prominent ornithologists resided.

Because of Oklahoma’s geographic position in the middle of a large land mass, one astride distinct avifauna—the so-called eastern birds and western birds on either side of the Great Plains—it is not surprising that the state’s list of birds has a little of everything. Yet being at a geographic crossroads of the continent has not meant that recent additions to the Oklahoma list have been only of vagrants. To be sure, some additions have been of startling vagrants, perhaps the oddest being the Great



**Fig. 3.** Frequency of first state records in Oklahoma, since Nice (1931), by month, on the basis of the date that the bird was detected initially.

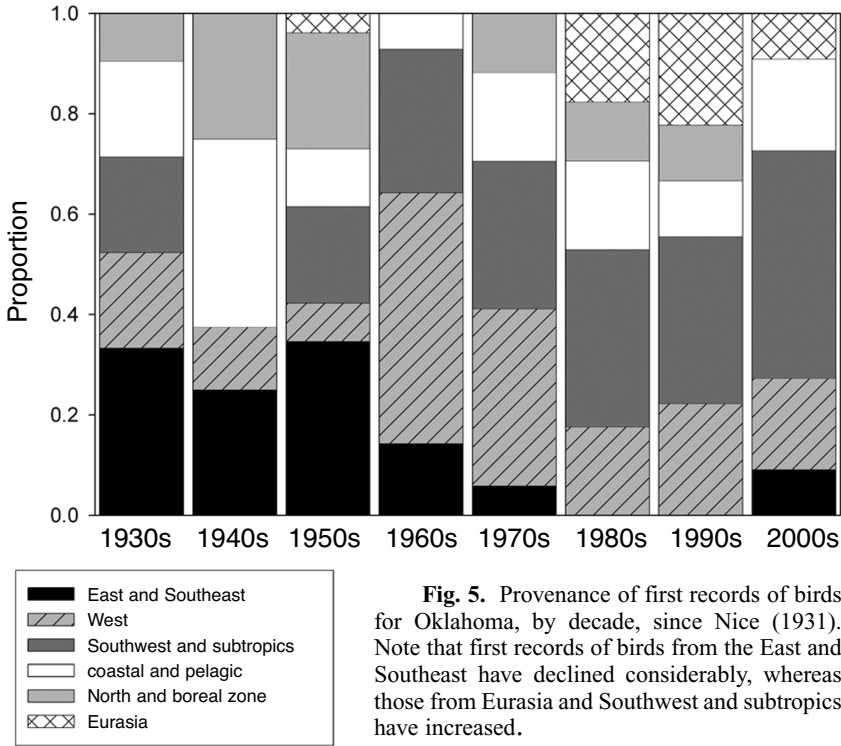


**Fig. 4.** First state records, since Nice (1931), by county and geographic region, the latter as defined by the Oklahoma Bird Records Committee (2004) and as shown in heavy black lines on the map. The pie shows the proportion of firsts in each region. A high incidence of firsts coincides with the large urban areas (and, thus, large populations of birders) surrounding Oklahoma City and Tulsa, but the highest number of firsts is from the “frontier” of the western Panhandle.

Frigatebird (*Fregata minor*) collected at Perry, Noble County, 3 November 1975 (Heller and Barclay 1977, Tomer et al. 1996), the Jabiru (*Jabiru mycteria*) photographed near Bixby, Tulsa County, 28 July–9 August 1973 (McConnell and McConnell 1974), and the Ringed Kingfisher (*Ceryle torquatus*) photographed at Stillwater, Payne County, 29 September–2 October 1998 (Dole 1999). But many additions, particularly between the early 1930s and late 1950s, were of species that proved to be regular components of Oklahoma’s avifauna, whether those at geographic limits of their respective ranges, such as the Curve-billed Thrasher (*Toxostoma curvirostre*); Sutton 1948) and Cassin’s Kingbird (*Tyrannus vociferans*); Sutton 1936), or those undergoing broad-scale range expansions, such as the Neotropical Cormorant (*Phalacrocorax brasilianus*); Newell and Sutton 1982) and Great-tailed Grackle (*Quiscalus mexicanus*); Wehtje 2003).

Other Oklahoma firsts were of species that occurred regularly during migration. Such quintessentially “eastern” migrants as the Yellow-bellied Flycatcher (*Empidonax flaviventris*), Philadelphia Vireo (*Vireo philadelphicus*), Golden-winged Warbler (*Vermivora chrysoptera*), and Blackburnian Warbler (*Dendroica fusca*) were not recorded until the 1950s (Sutton 1967, Baumgartner and Baumgartner 1992). Other regular migrants first noted in Oklahoma post-Nice (1931) include several species that breed on the northern Great Plains and winter south of Oklahoma (e.g., Nelson’s Sharp-tailed Sparrow, (*Ammodramus nelsoni*); Graber 1953), move through the plains en route to breeding grounds even farther north (e.g., Short-billed Dowitcher, (*Limnodromus griseus*); Sutton 1938), or migrant sparingly through the westernmost Panhandle (e.g., Townsend’s Warbler, (*Dendroica townsendi*); Sutton 1934).

The eastern component to the list of new birds has dropped steadily over the 8 decades we considered (Fig. 5), and the western component peaked in the 1960s and 1970s, likely coincident with extensive exploration of the Panhandle. Since that time, the number of species of southwestern and subtropical (i.e., Arizona, New



**Fig. 5.** Provenance of first records of birds for Oklahoma, by decade, since Nice (1931). Note that first records of birds from the East and Southeast have declined considerably, whereas those from Eurasia and Southwest and subtropics have increased.

Mexico, southern Texas, and northern Mexico) origin has increased steadily, such that it now accounts for the largest proportion of new species (Fig. 5).

Another key contributor to the detection of various recent firsts is an increase in skill and knowledge of bird identification. A good example is provided by the family Laridae, which contains many species that are notoriously difficult to identify. Since 1978, 27.5% (11 of 40) of first state records for Oklahoma have been of various species of gulls and terns. Without important advances in field identification, many of these species—and likely also some of the recently added loons, shorebirds, and hummingbirds—may have passed through the state unnoticed.

### Predicting the Future

It is commonplace for bird enthusiasts to predict the next species likely to be found in a particular area. Nice and Nice (1924) were the first to engage in such prognostication for Oklahoma: in an appendix, they listed 29 species (and an additional 7 subspecies) of birds documented near Oklahoma but yet to be recorded within the state’s boundaries. As a testament to the Nice’s’ perceptivity, by 1965 every one of those 29 species had been documented in the state (Sutton 1967, Baumgartner and Baumgartner 1992).

Subsequent efforts have, of course, had lower rates of success. Weske (1968) provided a later, flawed example. On the basis of various species allegedly recorded in and near Clayton in northeastern New Mexico, Weske gave a list of 17 species that could therefore turn up in the Black Mesa area. A few of those species, such as the Calliope Hummingbird (*Stellula calliope*), Cordilleran Flycatcher (*Empidonax [difficilis] occidentalis*), Violet-green Swallow (*Tachycineta thalassina*), and Western Bluebird (*Sialia mexicana*), could be expected to occur in the area, but most of the others, especially the Spotted Owl (*Strix occidentalis*), Greater Pewee (*Contopus pertinax*), Buff-breasted Flycatcher (*Empidonax fulvifrons*), Hutton's Vireo (*Vireo huttoni*), and Crissal Thrasher (*Toxostoma crissale*), seem much more likely to have been misidentifications, making their potential occurrence in Oklahoma moot.

Arterburn (1999, 2003) fared better, and his perceptivity rivaled that of the Nice's, in that 8 of the 12 species he listed in his first installment of "The Next New Birds for Oklahoma" (Arterburn 1999) have since been documented in the state, and another, the Long-tailed Jaeger (*Stercorarius longicaudus*), appears to have occurred earlier, but the record was published as pertaining to a Parasitic Jaeger (*S. parasiticus*; Newell 1971). Records of 2 additional species on his second such list (Arterburn 2003), the Reddish Egret (*Egretta rufescens*) and Bronzed Cowbird (*Molothrus aeneus*), have since been endorsed by the OBRC (2004).

To Arterburn's (2003) most recent list, which includes the Tufted Duck (*Aythya fuligula*), Bridled (*Sterna anaethetus*) and Sooty (*S. fuscata*) Terns, Long-billed Murrelet (*Brachyramphus perdix*), Flammulated Owl (*Otus flammeus*), Fork-tailed Flycatcher (*Tyrannus savana*), Hepatic Tanager (*Piranga flava*), and Scott's Oriole (*Icterus parisorum*), we would add 5 species: the Ancient Murrelet (*Synthliboramphus antiquus*) has strayed many times across North America. The Magnificent Hummingbird (*Eugenes fulgens*) has been recorded multiple times in Kansas and Texas, and there are records for Colorado, Arkansas, and Louisiana. Costa's Hummingbird (*Calypte costae*) has been recorded in Colorado, Kansas, and Texas. A Eurasian species, the Northern Wheatear (*Oenanthe oenanthe*), has reached most mid-western states, with records southwesterly to Arkansas, Louisiana, and Texas. The most overdue species for Oklahoma is the Golden-crowned Sparrow (*Zonotrichia atricapilla*), which not only has reached New Mexico, Colorado, Louisiana, and Missouri—not to mention as far afield as Michigan and Florida—but has been recorded in Kansas 20 times and in Texas nearly 30 times!

Other potential additions are longshots, but, as examples, the King Eider (*Somateria spectabilis*) has reached Kansas, Texas, and various midwestern states; the Hermit Warbler (*Dendroica occidentalis*) and Painted Redstart (*Myioborus pictus*) have made it to Kansas and Texas; the Brambling (*Fringilla montifringilla*), another Eurasian species, has been found in various midwestern states, Colorado, and Kansas; and, remarkably, singing Tropical Parulas (*Parula pitiayumi*) occurred in the Panhandle of Texas and in eastern Colorado in the past 2 years. There are doubtless many other examples. Clearly, Oklahoma's future potential is high.

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