

## **FINAL PERFORMANCE REPORT**



**FEDERAL AID GRANT NO. T-9-P-1**

**NORTH AMERICAN BIRD CONSERVATION INITIATIVE  
PLANNING FOR OKLAHOMA**

**OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION**

**July 28, 2003 through July 24, 2011**

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State: Oklahoma

Grant Number: T-9-P-1

Grant Program: State Wildlife Grants

Grant Title: North American Bird Conservation Initiative Planning for Oklahoma

Grant Period: July 28, 2003 – July 24, 2011

### A. Abstract:

The Staff of the Oklahoma Wildlife Diversity Program assisted the staffs of the Central Hardwoods Joint Venture, the Playa Lakes Joint Venture, the Lower Mississippi Valley Joint Venture, the Oaks and Prairies Joint Venture, and avian biologists and land managers from the state wildlife agencies of neighboring states, the U.S. Fish and Wildlife Service and the U.S. Forest Service to develop and refine bird conservation plans for each of the Bird Conservation Regions in Oklahoma. In the course of working cooperatively with the joint ventures, Oklahoma-specific data were gathered to prepare an overview of the current status of birds in Oklahoma and a strategic-level bird conservation assessment for the suite of 74 avian species that are recognized as species of greatest conservation need in the Oklahoma Comprehensive Wildlife Conservation Strategy. The habitat associations for these bird species were identified within the context of the six Bird Conservation Regions that encompass Oklahoma, and these are summarized in this report. This report serves as a foundation on which future bird conservation planning in Oklahoma can build. Because this report is divided into individual sections for each of the six Oklahoma Bird Conservation Regions, conservation planning can be scaled down to the BCR level or scaled up to the statewide level.

### B. Objective:

Develop or refine comprehensive bird conservation plans for five Bird Conservation Regions in Oklahoma. The development of each plan will include the identification of regionally important bird species and their habitat needs as well as the identification of bird conservation opportunity areas, priority conservation actions and regional habitat management recommendations for land managers.

### C. Introduction and Approach:

Oklahoma's bird fauna is diverse and it includes approximately 385 species in 55 families that occur annually within the state as either breeding-season, winter-season, or year-round residents, or as migrants (Sutton 1967, Grzybowski et. al. 2009). An additional forty species occur irregularly in the state and are considered to be vagrant species; most of these species are not addressed in this report. Collectively, a community of bird species occupies every naturally-occurring and man-made habitat in the state. The Oklahoma Comprehensive Wildlife Conservation Strategy (OCWCS) identifies 74 species of birds as Species of Greatest Conservation Need in the state because they have been identified as conservation priorities within the North American Waterfowl Management Plan, the U.S. Shorebird Plan, the Partners In Flight Landbird Conservation Plan or the North American Waterbird Plan, or they are designated in regulation as species that are state or federally threatened, endangered or species of special concern (ODWC 2005, Brown et. al. 2001, Kushlan et. al. 2002, and Rich et. al. 2004). The bird Species of Greatest Conservation are further ranked within the OCWCS based upon a combination of criteria including their population size, population trend, the size of their geographic range and their degree of habitat specialization. The Oklahoma avian Species of Greatest Conservation Need are shown in Table 1 and are listed by their residence status and relative abundance in each of the six North American Bird

Conservation Initiative Bird Conservation Regions that occur in Oklahoma. This report provides a strategic-level conservation plan for the bird species that are considered Species of Greatest Conservation Need within Oklahoma. It is divided into an introductory section and six regional sections for the six bird conservation regions that occur in Oklahoma. This report should be viewed as a statewide assessment that can be modified and expanded over time.

The North American Bird Conservation Initiative divides the geography of the United States, Canada and Mexico in 67 Bird Conservation Regions, of which the United States encompasses all or a portion of 35 (US NABCI 2000). The state of Oklahoma encompasses six of these Bird Conservation Regions – the Shortgrass Prairie BCR (BCR 18), the Central Mixed-grass Prairie BCR (BCR 19), the Oaks and Prairies BCR (BCR 21), the Eastern Tallgrass Prairie BCR (BCR 22), the Central Hardwoods BCR (BCR 24) and the West Gulf Coastal Plain/Ouachita Mountains BCR (BCR 25). The Oklahoma Department of Wildlife Conservation works in partnership with four habitat-based, all-birds joint ventures to address conservation planning and conservation needs for all birds within these bird conservation regions. The contents of this report are based largely upon collaborative conservation planning with these joint ventures as well as information from the four national multi-species bird initiatives: 1) the Partners In Flight Land Bird Plan and its companion state-level plan, the Partners In Flight Continental Priorities and Objectives for Oklahoma; 2) the United States Shorebird Plan; 3) the North American Waterfowl Management Plan and 4) the North American Waterbird Conservation Plan. The four national plans are largely strategic in nature, but the PIF Continental Priorities and Objectives for Oklahoma is an attempt to identify population goals for the land birds that have decreasing population trends or small population sizes. We have not committed to adopting the Partners In Flight population goals at this time because many of these goals are very challenging and a more thorough evaluation is needed to determine the feasibility of each of these. Additionally, there is not a sufficient source of funding at this time to implement conservation, habitat restoration and habitat enhancement on the 100s of thousands of acres that would be needed in Oklahoma alone to meet these goals. While we have not adopted and incorporated those population goals into this strategic plan, we support them in concept and believe that they have value in establishing conservation priorities. For example, while it may not be feasible to increase Oklahoma's Yellow-billed Cuckoo population by 450,000 birds (a 50% population increase), it does illustrate a need for additional conservation and restoration efforts aimed at deciduous forest tracts.

The Oklahoma Department of Wildlife Conservation is a member of each of the four avian conservation joint ventures whose boundaries encompass parts of Oklahoma. Much of the activity that was conducted under this federal assistance grant was our coordination and cooperative work with these joint ventures. Project personnel are members of the land bird and/or nongame bird technical committees for each of the four joint ventures and we represent nongame bird interests through our participation. The administrative boundary of the Playa Lakes Joint Venture was expanded shortly after 2001 to include all of BCRs 18 and 19. The Playa Lakes JV serves as our primary bird conservation partner in those two regions. The Oaks and Prairies Joint Venture was formed in 2006 to address bird conservation in BCR 21 (the Oaks and Prairies BCR) in Oklahoma and Texas and BCR 20 (Edwards Plateau BCR) in Texas. The administrative boundaries of the Oaks and Prairies Joint Venture encompass all of BCR 21 in Oklahoma and were expanded in 2009 to include the Oklahoma portion of the Eastern Tallgrass Prairie BCR (BCR 22). The Oaks and Prairies Joint Venture is our primary bird conservation partner in those two regions. We are founding members of the Central Hardwoods Joint Venture that was initially organized in 2000 to focus attention on bird conservation in the Central Hardwoods BCR. Therefore, the Central Hardwoods JV has become our primary bird conservation partnership in BCR 24. Similar to the Playa Lakes JV, the Lower Mississippi Valley Joint Venture has a 20-year history of bird conservation planning and implementation that addresses waterfowl, shorebirds and wetland-associated land birds. In 1999 the Lower Mississippi Valley JV transitioned to an all-birds joint venture and established technical teams for nongame land birds and nongame aquatic birds. The joint venture has adjusted its administrative boundaries to encompass all of BCR 25 (West Gulf Coastal Plain and Ouachita Mountains BCR) and is

our all-birds conservation partner in this region. During the course of this grant, we have worked in the conjunction with the joint ventures to develop strategic conservation plans and planning tools for many bird groups. For example, the Lower Mississippi Valley and Central Hardwoods JVs have developed decision support tools for forest birds in the Ozark Highlands, Ouachita Mountains and the West Gulf Coastal Plain and we helped review and refine these models. Similarly, we have assisted the joint ventures in the development of grassland bird conservation plans for the Central Hardwoods and the Oaks and Prairies BCRs, and shorebird/water bird conservation plans for BCRs 18 and 19. The data that were used to develop these products were used to inform and strengthen the strategic plan developed under this report.

**Table 1.** Bird Species of Greatest Conservation Need in Oklahoma Arranged by Bird Conservation Region. Each species' residence status within each Bird Conservation Region is denoted as follows: B = widespread in breeding season; b = limited distribution in breeding season; W = widespread in winter season; w = limited distribution in winter season; M = widespread migrant; m = limited distribution or rare migrant

Common Name/ SGCN Tier	BCR 18	BCR 19	BCR 21	BCR 22	BCR 24	BCR 25
Snowy Egret - Tier II	b	B	B	B	B	B
Little Blue Heron - Tier II	b	B	B	B	B	B
Wood Stork - Tier II			m			m
Trumpeter Swan - Tier III		w	w	w	w	w
Northern Pintail - Tier III	b, W	W	W	W	W	W
Canvasback - Tier III	M	W	W	W	W	W
Lesser Scaup - Tier III	w	W	W	W	W	W
Swallow-tailed Kite - Tier II			m			m
Bald Eagle - Tier III	b, w	b, W	b, W	b, W	b, W	b, W
Swainson's Hawk - Tier I	B	B	B	b		
Ferruginous Hawk - Tier II	b, W	W	w	w		
Peregrine Falcon - Tier III	m	M	M	M	M	M
Prairie Falcon - Tier III	b, W	W	w	w	w	w
Northern Bobwhite - Tier III	B, W	B, W	B, W	B, W	B, W	B, W
Scaled Quail - Tier III	B, W	b, w				
Lesser Prairie Chicken - Tier I	B, W	b, w				
Greater Prairie Chicken - Tier III			b, w	B, W		
Whooping Crane - Tier I	m	m	m	m		
Sandhill Crane - Tier III	M	M, W	M	m	m	m, w
King Rail Tier - III		b	b	B		b
Yellow Rail - Tier II			m	m	m	m, w
Black Rail - Tier II	m	m, b?	m			m
American Golden Plover - Tier II	M	M	M	M	m	m
Mountain Plover - Tier I	b	m	m			
Snowy Plover - Tier I	b, m	b, m	b, m			
Piping Plover - Tier II	m	m	m	m	m	m
Solitary Sandpiper - Tier III	m	M	M	M	M	M
Buff-breasted Sandpiper - Tier I		M	M	M	m	m
Upland Sandpiper - Tier II	b, M	b, M	b, M	B, M	M	M

Long-billed Curlew – Tier I	b	M	m			
Hudsonian Godwit – Tier III	m	M	m	m		m
Western Sandpiper – Tier II	M	M	M	m		m
Wilson’s Phalarope – Tier II	M	M	M	M	m	m
American Woodcock – Tier III		M	b, M	b, M	B, M	B, M
Interior Least Tern – Tier I	b	b	b	b	m	b
Whip-poor-will – Tier II					B	B
Short-eared Owl – Tier II	b, W	W	W	W	w	W
Burrowing Owl – Tier I	B, w	b, w	w	w		
Barn Owl – Tier III	B, W	B, W	b, w	b, w	b, w	b, w
Red-headed Woodpecker – Tier II	B	B, w	b, W	b, w	b, W	B, W
Golden-fronted Woodpecker – Tier II		b, w				
Lewis’s Woodpecker – Tier II	b, w					
Red-cockaded Woodpecker – Tier I						b, w
Willow Flycatcher – Tier II		m	M	M	b, M	b, M
Loggerhead Shrike – Tier I	B, W	B, W	B, W	B, W	b, W	b, W
Bell’s Vireo – Tier I	b	B	B	B	B	b
Black-capped Vireo – Tier I		b	b			
Pinyon Jay – Tier II	b, w					
Juniper Titmouse – Tier III	b, w					
Brown-headed Nuthatch – Tier II						b, w
Wood Thrush – Tier II		m	m	m	b, M	b, M
Sprague’s Pipit – Tier II	m	M	M	M	m	m
Blue-winged Warbler – Tier II					b, m	m
Prairie Warbler – Tier II			m		b, M	B, M
Cerulean Warbler – Tier I					b, m	b, m
Prothonotary Warbler – Tier II		b	B	b	B	B
Worm-eating Warbler – Tier II					b	b
Swainson’s Warbler – Tier II			B		b	b
Louisiana Waterthrush – Tier II		b	B	b	B	B
Kentucky Warbler – Tier II			B	b	B	B
Hooded Warbler – Tier II			M		b	B, M
Painted Bunting – Tier II	b	B	B	b	b	b
Bachman’s Sparrow – Tier I			B	b	b	b, w
Cassin’s Sparrow – Tier II	B	B	B			
Baird’s Sparrow – Tier II	m	m				
LeConte’s Sparrow – Tier II	m	W	W	W	w	w
Henslow’s Sparrow – Tier I				b		
Nelson’s Sharp-tailed Sparrow – Tier III			M	m	m	m
Harris’s Sparrow – Tier II	w	W	W	W	w	w
McCown’s Longspur – Tier II	W	W	W			
Chestnut-collared Longspur – Tier II	W	W	W	w		
Smith’s Longspur – Tier II		W	W	W	w	w
Rusty Blackbird – Tier II		w	W	w	w	W
Bullock’s Oriole – Tier II	B	b				

In addition to the list of formally recognized avian Species of Greatest Conservation Need, there are other species which are of conservation interest to biologists in Oklahoma and to biologists in our neighboring states due to their declining population trend or the regional importance of Oklahoma and the south-central United States to their overall conservation. Below is a list of additional bird species of conservation interest although they did not meet all of the criteria for selection as Species of Greatest Conservation Need in the OCWCS. This list includes many species that have been identified as species of high stewardship responsibility by the joint venture partnerships and several marsh-dependent species that have been evaluated by the joint ventures but not the North American Waterbird Conservation Plan partnership. Many of these are species whose populations are in decline at a regional scale but whose populations remain sufficiently large that they are not immediate conservation concerns at this time.

**Anhinga** – rare nesting species in Oklahoma, but population in the Neotropics is large  
**American Bittern** – marsh-dependent species not evaluated; migrant through Oklahoma  
**Least Bittern** - marsh-dependent species not evaluated; rare nesting species in Oklahoma  
**Yellow-crowned Night Heron** – secretive, wetland dependent species  
**White-faced Ibis** – population small but population trend is increasing  
**Mississippi Kite** – species of high regional responsibility, but population appears to be stable  
**Purple Gallinule** – marsh-dependent species not evaluated; rare nesting species in Oklahoma  
**Lesser Yellowlegs** – population declining significantly, but overall population still large  
**Whimbrel** - population declining significantly, but occurs in trivial numbers in Oklahoma  
**Marbled Godwit** – population declining significantly, but occurs in trivial numbers in Oklahoma  
**Red Knot** - population declining significantly, but occurs in trivial numbers in Oklahoma  
**White-rumped Sandpiper** – species of high regional responsibility, but population stable  
**Dunlin** - population declining significantly, but overall population still large  
**Wilson's Snipe** - population declining significantly, but overall population still large  
**Black Tern** – marsh-dependent species; migrant through Oklahoma  
**Yellow-billed Cuckoo** – population declining significantly but overall population still large  
**Chuck-will's-widow** – population declining significantly but overall population still large  
**Chimney Swift** – population declining significantly but overall population still large  
**Rufous Hummingbird** – population declining significantly, but Oklahoma population size is trivial  
**Eastern Wood Pewee** – species of high regional responsibility with a declining population trend  
**Scissor-tailed Flycatcher** – species of high regional responsibility, but population is stable  
**Yellow-throated Vireo** - small population size with a low rate of population decline  
**Chihuahuan Raven** – species of high regional responsibility, but its population decline is small  
**Carolina Chickadee** – species of high regional responsibility, but its population decline is small  
**Verdin** – regional population declining significantly, but Oklahoma population size is trivial  
**Canyon Wren** - small population size with a low rate of population decline  
**Brown Thrasher** – population declining significantly, but overall population still large  
**Curve-billed Thrasher** - small population size with a low rate of population decline  
**Yellow-throated Warbler** – small population size but a species of regional responsibility  
**Summer Tanager** – species of high regional responsibility  
**Dickcissel** – population declining significantly but overall population still large  
**Rufous-crowned Sparrow** – small population size with a low rate of population decline  
**Grasshopper Sparrow** - population declining significantly but overall population still large  
**Field Sparrow** - population declining significantly but overall population still large  
**Lark Sparrow** - population declining significantly but overall population still large  
**Lark Bunting** - population declining significantly but overall population still large  
**Eastern Meadowlark** - population declining significantly but overall population still large  
**Baltimore Oriole** – species of high regional responsibility with a declining population trend  
**Purple Finch** – wintering species with a significant declining population trend

## Conservation Issues Affecting Oklahoma Bird Populations:

Birds are good model or umbrella species for local conservation efforts because many species are relatively easy to detect (can be seen or heard readily and with low cost or effort) and therefore they also are easily monitored (Fitzgerald and Pashley 2000). Additionally, there is a relatively large body of ecological research that has been conducted on birds and information about their ecology and habitat needs can be gleaned from scientific literature and from more popular and anecdotal records from the birding community. Despite these benefits of working with birds, birds have some biological attributes that make their conservation unique and sometimes challenging. Because of their ability to fly, birds are very mobile and relatively good at dispersing into or colonizing tracts of newly modified or restored habitat. This allows bird populations to respond quickly to habitat changes and greatly reduces the need to translocate individuals in order to establish new populations where suitable habitat exists. However, there are also unique challenges to the conservation of birds. Many birds are habitat specialists that occupy a relatively narrow range of habitats with specific structural characteristics. Examples of this include Least Terns and Snowy Plovers that require ephemeral sandbars as nesting habitat, and Red-cockaded Woodpeckers that require very mature pine woodlands. Shrubland and tallgrass prairie birds are other good examples because many of these species require habitat conditions that shift slightly over time or that exists for a relatively short period of time at any one location. Another complicating aspect of bird biology is that most species are territorial at some point in the year and occupy relatively large acreages during the nesting season. Additionally, many of the more specialized species also are "area-sensitive" meaning that their habitat must occur in relatively large tracts in order for it to be suitable to sustaining local populations. Many forest-interior and grassland land birds fall into this category and tend to occur disproportionately in large habitat tracts or landscapes that are dominated by contiguous prairie or forest habitat. The reasons for this behavior are not always clear but the root cause may be 1) a predilection to aggregate nesting territories in close proximity that requires more habitat than would be needed by one or a few pairs, 2) a need to conceal nesting territories and nests from predators or brood parasitic cowbirds, or 3) a requirement for large foraging areas during the brood-rearing cycle.

Several factors influence bird populations, but the most substantial ones are related to the quantity and quality of habitat at local, landscape and regional scales. Most other factors are in some way inter-related to habitat quality or quantity. For example, habitat fragmentation by human infrastructure (e.g. roads, utility lines, towers, wind mills) influences habitat quality at the local scale and landscape scale. Increased nest predation or clutch parasitism is often related to a decline in habitat quality that favors predator/parasite populations or limits the ability of birds to conceal their nests or young. The widespread issues that challenge bird conservation are outlined below.

### **Issues Acting Directly on Habitat Quantity and Quality:**

Several inter-related issues affect the acreage and quality of habitat:

- 1) Habitat loss as a result of the conversion of existing habitat to a dramatically different habitat type or land use. Examples of this are the conversion of tallgrass prairies and bottomland forests to row crop agricultural lands, the conversion of oak woodlands to Bermuda grass pasturelands, the conversion of mixed pine-oak forests to even-age loblolly pine plantations, or the draining of shallow wetlands for agricultural development. These types of large-scale land conversions result in the direct loss of hundreds to thousands of acres of habitat which results in a dramatic change in the bird communities using those acres. Habitat loss is the most visible indication of a loss of habitat quantity and quality. In most habitat types, it has the most dramatic and immediate effect on bird community composition and abundance. The impact of direct habitat loss due to conversion is related to the scale/size of the conversion. Often, habitat conversion occurs on a large scale (1,000s of acres) in association with agricultural development). Smaller scale conversions, in the range of one to 20

acres, have a smaller impact and are often treated as examples of habitat fragmentation because of their size.

- 2) Habitat modification is a more subtle change in the vegetative structure or composition of an area due to the way that the habitat is used or managed. Examples of this are the substantial increase in the abundance of eastern redcedar in oak woodlands and mixed-grass prairies as a result of fire suppression; the loss of age-structure diversity in forestlands that have been clear-cut and regenerated as even-age stands; or the loss of grass and forb diversity on prairies that have been grazed continuously or mowed annually for hay. These changes often occur gradually over the span of decades but alter the quality of the habitat for many species of birds.

As the examples above suggest, there are many sub-issues associated with habitat modification including: altered patterns of fire (e.g. fire suppression), invasive plant species, altered grazing systems (e.g. continuous grazing) and herbicide treatment (e.g. the spraying of broadleaf herbicides in grassland habitats).

- 3) Habitat fragmentation by the alteration of interspersed tracts of habitat or the construction of residential or agricultural infrastructure. Examples of this include the clearing of forests in right-of-ways for the construction of electric power lines or pipelines; the clearing of vegetation to construct roads; the construction of agricultural fields or residential developments within a landscape of native habitats. Habitat fragmentation directly affects both habitat quantity and quality. The source of the fragmentation (e.g. right-of-way development) results in the direct loss of habitat, while at the same time it isolates and reduces the size of adjacent tracts of habitat. Some bird species can be classified as "area sensitive" species, which means that in order for these species to maintain their populations they need to occupy an area that is much larger than conventional wisdom would suggest. For example, many songbirds cluster their nesting territories in close proximity and will only occupy a tract of habitat if it is sufficiently large to support several territories.

As the examples above suggest, there are many sub-issues associated with habitat fragmentation including: road, pipeline and utility line construction, wind energy development, mining, oil and gas development, residential and second-home development, shelterbelt planting (within prairie landscapes) and fence construction (in prairie landscapes).

- 4) In addition to the larger-scale issues described above that affect widespread terrestrial habitats, there are other human actions that can affect the condition of geographically restricted habitats such as marshes, forested wetlands, streams and riparian forests. These include a) the pumping of shallow groundwater that can reduce the flow of springs and seeps, b) the draining or dewatering of streams and wetlands for irrigation and other purposes, c) the removal of vegetation along stream channels or on the edges of wetlands that can reduce bank stability and increase bank erosion, d) the removal of vegetation surrounding streams and wetlands that increases erosion and deposition of soil and sediment into wetlands, and e) the over-application of fertilizer near wetlands that can alter the density and structure of algae and aquatic vegetation.

#### **Increased Rates of Predation and Brood Parasitism:**

The combined effects of habitat loss, habitat modification and habitat fragmentation influence the way that natural forces such as predation, brood-parasitism, drought and flooding affect bird populations. In landscapes where habitats are degraded and/or occur in smaller-sized tracts, there are fewer locations to provide shelter or water to buffer the effects of drought or severe weather conditions (both cold/ice and heat). Similarly, landscapes in which native habitats occur in relatively small tracts that are isolated from one another by larger tracts of unsuitable habitats typically support fewer birds because of the lower availability of food resources, increased mortality for birds that are adjacent to or more across unsuitable



habitats, and the higher likelihood of local extirpations of isolated groups of birds. Additionally, birds that nest in landscapes that are dominated by small tracts of native habitats often have lower nesting success because of the greater influence of nest predators and parasites on nest success. Many predators (e.g. raccoon, striped skunk, black ratsnake) and the brood-parasitic Brown-headed Cowbird are habitat generalists that survive well and often maintain greater population densities in landscapes that contain a mosaic of small tracts of grassland and woodland habitats. Clutch parasitism by Brown-headed Cowbirds is a conservation issue that is unique to birds but is indirectly tied to the issues that cause a decline in habitat quality and affect most wildlife species. While the Brown-headed Cowbird typically has no effect on non-passerine birds, it can have a dramatic effect on small songbirds, particularly long-distance migrants that are capable of raising only one brood of young per year and whose nesting period coincides with the egg-laying period of the cowbird. Table 2 lists of most of the nesting songbirds in Oklahoma and indicates which species are successfully parasitized by cowbirds (i.e. cowbirds lay their eggs in the nests of these species and the host species often raises the cowbird's chicks successfully). The data for this table come from multiple sources, but especially Friedmann (1971), Pease and Grzybowski (1995), Shaffer et. al. (2003) and Wiens (1963). General patterns that emerge with respect to cowbird nest parasitism are 1) the rate of cowbird nest parasitism is greater near the edge of both forest and grassland tracts, 2) the rate of cowbird nest parasitism is greater in areas that have an increased availability of above-ground perches (e.g. trees, snags, fences, utility lines), 3) the rate of parasitism is often lower for ground-nesting birds in forested habitats, and 4) the rate of cowbird nest parasitism is greater for nests that are constructed after April 30 and before July 15 than it is for early-season and late-season nests. Brown-headed Cowbird females typically lay 35 – 45 eggs per year and cowbird eggs hatch after only 11 to 12 days of incubation. Smaller songbirds (e.g. warblers) and songbirds that have relatively long incubation periods (e.g. vireos) are most negatively affected by cowbird parasitism because a single cowbird chick can effectively kill an entire brood of host chicks because of their competitive edge in begging for food from the parent birds. Because Brown-headed Cowbirds parasitize the nests of a wide range of songbird species, they can locally extirpate some host species while maintaining their population through parasitizing more common hosts.

**Table 2.** Oklahoma Breeding Bird Species Whose Nests Are Successfully and Unsuccessfully Parasitized by Brown-headed Cowbirds.

Common Name	Successfully Parasitize	Unsuccessfully Parasitized	Notes
Mourning Dove		X	poor host species
Yellow-billed Cuckoo		X	
Say's Phoebe		X	
Eastern Phoebe	X		
Acadian Flycatcher	X		
Willow Flycatcher	X		
Eastern Wood Pewee	X		uncommonly parasitized
Great Crested Flycatcher		X	
Western Kingbird		X	rejects cowbird eggs
Eastern Kingbird		X	rejects cowbird eggs
Scissor-tailed Flycatcher		X	
Horned Lark	X		
Purple Martin		X	
Northern Rough-winged Swallow		X	
Barn Swallow		X	
Cliff Swallow		X	
Bell's Vireo	X		
White-eyed Vireo	X		
Black-capped Vireo	X		
Red-eyed Vireo	X		
Yellow-throated Vireo	X		
Warbling Vireo	?	?	uncertain – varies by region
Loggerhead Shrike		X	
Blue Jay		X	rejects cowbird eggs
Carolina Chickadee		X	
Tufted Titmouse		X	
White-breasted Nuthatch		X	
Brown-headed Nuthatch		X	
Bushtit		X	
Carolina Wren	X		uncommonly parasitized
Bewick's Wren		X	
House Wren		X	
Northern Mockingbird		X	
Brown Thrasher		X	rejects cowbird eggs
Curve-billed Thrasher		X	
Gray Catbird		X	rejects cowbird eggs
Blue-gray Gnatcatcher	X		
Eastern Bluebird	X		uncommonly parasitized
American Robin		X	rejects cowbird eggs
Wood Thrush	X		
Yellow Warbler	X		
Prairie Warbler	X		
Pine Warbler	X		
Cerulean Warbler	X		
Yellow-throated Warbler	X		uncommonly parasitized

Northern Parula	X	
Prothonotary Warbler	X	
Black and White Warbler	X	
American Redstart	X	
Swainson's Warbler	X	
Worm-eating Warbler	X	
Louisiana Waterthrush	X	uncommonly parasitized
Kentucky Warbler	X	uncommonly parasitized
Hooded Warbler	X	
Common Yellowthroat	X	
Yellow-breasted Chat	X	
Summer Tanager	X	
Scarlet Tanager	X	
Northern Cardinal	X	
Blue Grosbeak	X	
Indigo Bunting	X	
Painted Bunting	X	
Eastern Towhee	X	
Dickcissel	X	
Bachman's Sparrow	X	
Grasshopper Sparrow	X	
Henslow's Sparrow	X	
Lark Sparrow	X	
Field Sparrow	X	
Chipping Sparrow	X	
Eastern Meadowlark	X	
Western Meadowlark	X	
Red-winged Blackbird	X	mob defense limits parasitism
Common Grackle	X	rarely parasitized
Orchard Oriole	X	
Baltimore Oriole		X rejects cowbird eggs
House Finch		X poor host species
American Goldfinch		X poor host species

## D. Results and Discussion:

The remaining portion of this report is divided into six regional sections – one section for each of the six Bird Conservation Regions in Oklahoma - and an appendix that provides a brief conservation status description for each of the 74 avian species of greatest conservation need identified in the Oklahoma Comprehensive Wildlife Conservation Strategy (2005). Each of the six regional sections identifies the entire bird community for that BCR (listed by season of primary occurrence), identifies the species of greatest conservation need within the BCR, and describes each of the major habitat types in the region. All avian common names are based upon the Check-list of North American Birds, 7<sup>th</sup> Edition (1998).

### Shortgrass Prairie BCR – BCR 18

The Shortgrass Prairie BCR encompasses a relatively small portion of Oklahoma and comprised of the three panhandle counties and the western portion of Harper County in the extreme northwestern part of the state. The BCR is home to approximately 290 species of birds including 45 of the species that are recognized as Species of Greatest Conservation Need in Oklahoma. From the perspective of bird species of greatest conservation need, the habitats within this BCR can be organized into six broad categories: shortgrass prairie, sand sagebrush shrublands, pinyon-juniper woodlands, riparian woodlands, herbaceous wetlands, and mixed-grass prairie. These native habitat types are described in greater detail below. This region also contains some man-made habitats such as crop fields and urban/residential areas, but these are not discussed further because of their relatively importance to avian species of greatest conservation need. Habitats and birds of special interest in the region include shortgrass prairie that supports nesting populations of Mountain Plover, Long-billed Curlew, Burrowing Owl and Cassin's Sparrow, and the pinyon pine-juniper woodland habitat that supports Pinyon Jay and Juniper Titmouse populations.

Important conservation issues within the Oklahoma portion of BCR 18 include:

- conversion of shortgrass prairie, mixed-grass prairie and herbaceous wetland habitats to agricultural fields
- sedimentation (filling) of playas and herbaceous wetlands due to adjacent agricultural practices
- fragmentation of prairies and sand sagebrush shrublands by roads, utility lines, wind breaks and crop fields
- dewatering of streams and shallow alluvial groundwater for crop production which lowers water tables and alters riparian woodland communities
- encroachment of exotic saltcedar in riparian areas and exotic yellow bluestem in remaining prairies
- continuous, year-round grazing and fire suppression in pinyon-juniper woodlands that reduces herbaceous cover and potentially increases juniper

Below is a listing of the avian species that regularly occur in the Shortgrass Prairie BCR. These species are arranged by their season(s) of residence in the state. The species that are shown in **bold** print are Species of Greatest Conservation Need in Oklahoma:

Species Present Year-round Species (some species are migratory and have larger populations in the winter or breeding season)

Canada Goose  
Mallard  
Great Blue Heron  
Cooper's Hawk

Red-tailed Hawk  
**Ferruginous Hawk** (western part of BCR)  
American Kestrel  
Ring-necked Pheasant  
Wild Turkey  
**Lesser Prairie Chicken**  
**Northern Bobwhite**  
**Scaled Quail**  
American Coot (breeding population is small)  
Killdeer  
Mourning Dove  
Rock Pigeon  
Eurasian Collared Dove  
Greater Roadrunner  
**Barn Owl**  
Eastern Screech-Owl  
Great Horned Owl  
**Short-eared Owl** (wintering population is much larger)  
Belted Kingfisher  
Red-bellied Woodpecker  
Ladder-backed Woodpecker  
Downy Woodpecker  
Hairy Woodpecker  
Northern Flicker (wintering population is larger)  
Horned Lark  
Blue Jay  
American Crow  
Chihuahuan Raven  
Black-billed Magpie  
Carolina Chickadee (eastern part of BCR)  
White-breasted Nuthatch (western part of BCR)  
Bewick's Wren  
Rock Wren  
Eastern Bluebird  
American Robin  
Northern Mockingbird (breeding-season population is much larger)  
**Loggerhead Shrike**  
European Starling  
Northern Cardinal  
Spotted Towhee (western part of BCR and wintering population is larger)  
Field Sparrow (eastern part of BCR)  
Red-winged Blackbird  
Eastern Meadowlark (eastern part of BCR)  
Western Meadowlark  
Common Grackle  
Brown-headed Cowbird (breeding-season population is larger)  
House Finch  
American Goldfinch  
House Sparrow

Species with Localized (e.g. Black Mesa area) Year-round Populations

Pied-billed Grebe  
**Bald Eagle**  
Golden Eagle – more widespread in winter  
**Prairie Falcon** – more widespread in winter  
Western Screech Owl  
Barred Owl  
**Lewis's Woodpecker**  
Western Scrub Jay  
**Pinyon Jay**  
Common Raven  
**Juniper Titmouse**  
Bushtit  
Canyon Wren  
Curve-billed Thrasher  
Canyon Towhee  
Rufous-crowned Sparrow  
Great-tailed Grackle (primarily urban)

Species Present Primarily During the Summer Breeding Season

Wood Duck – small numbers may over-winter  
Blue-winged Teal  
Green Heron  
Black-crowned Night-Heron  
Turkey Vulture  
Mississippi Kite  
**Swainson's Hawk**  
American Avocet  
**Long-billed Curlew** (western part of BCR)  
Yellow-billed Cuckoo  
**Burrowing Owl**  
Common Nighthawk  
Common Poorwill  
Chimney Swift  
Black-chinned Hummingbird  
**Red-headed Woodpecker**  
Say's Phoebe  
Eastern Phoebe (eastern part of BCR)  
Great Crested Flycatcher (eastern part of BCR)  
Ash-throated Flycatcher  
Western Kingbird  
Eastern Kingbird  
Scissor-tailed Flycatcher (eastern part of BCR)  
Purple Martin  
Northern Rough-winged Swallow  
Cliff Swallow  
Barn Swallow  
House Wren  
Brown Thrasher  
**Bell's Vireo**  
Warbling Vireo

Blue Grosbeak  
Lazuli Bunting  
**Painted Bunting** (eastern part of BCR)  
Dickcissel (eastern part of BCR)  
**Cassin's Sparrow**  
Lark Sparrow  
Grasshopper Sparrow  
Lark Bunting (western part of BCR)  
Orchard Oriole  
Baltimore Oriole (eastern part of BCR)  
**Bullock's Oriole**  
Lesser Goldfinch (western part of BCR)

Uncommon Breeding Species/Edge of Range, but Common Migrants

**Upland Sandpiper** – primarily in tallgrass prairie remnants  
Spotted Sandpiper – primarily along Cimarron River  
**Willow Flycatcher** – primarily in riparian thickets and woodlands  
Tree Swallow – primarily in the vicinity of reservoirs  
Yellow Warbler – primarily in willow thickets and riparian forest  
Yellow-breasted Chat – primarily found in riparian thickets  
Common Yellowthroat – primarily in riparian thickets  
Green-tailed Towhee – primarily in riparian thickets in Black Mesa area  
Indigo Bunting – primarily in riparian thickets

Species with Very Local Breeding Populations (e.g. Black Mesa, Optima Reservoir)

**Mountain Plover**  
**Snowy Plover**  
Chuck-will's-Widow  
Western Wood Pewee  
Cassin's Kingbird  
Black-throated Sparrow

Sporadic or Accidental Breeding-Season Species (often weather/rainfall dependent)

Great Egret  
Little Blue Heron  
Snowy Egret  
Cattle Egret  
**Least Tern**  
White-winged Dove  
Vermillion Flycatcher  
Eastern Wood-Pewee  
Blue-gray Gnatcatcher

Species Present Primarily During the Winter

Cackling Goose  
Snow Goose – winter locally  
Green-winged Teal  
**Northern Pintail** – small numbers nest  
Northern Shoveler – small numbers nest  
Gadwall  
American Wigeon

**Canvasback**

Ring-necked Duck

**Lesser Scaup**

Common Goldeneye

Bufflehead

Common Merganser

Northern Harrier – rare nesting species

Sharp-shinned Hawk

Rough-legged Hawk

Merlin

Bonaparte's Gull

Ring-billed Gull

Herring Gull

Long-eared Owl

Yellow-bellied Sapsucker

Red-breasted Nuthatch

Brown Creeper

Golden-crowned Kinglet

Ruby-crowned Kinglet – more common as a migrant

Mountain Bluebird

Townsend's Solitaire

Cedar Waxwing

American Tree Sparrow

Savannah Sparrow

Fox Sparrow

Song Sparrow

White-crowned Sparrow

**Harris's Sparrow** (eastern part of BCR)

Dark-eyed Junco

Lapland Longspur

**Chestnut-collared Longspur**

**McCown's Longspur**

Brewer's Blackbird

Pine Siskin

Primarily Migrant Species but with Small Wintering Populations (often weather dependent)

Horned Grebe – winter on reservoirs

Tundra Swan - rare

Redhead – small numbers nest in some years

Sage Thrasher

Yellow-rumped Warbler

Lincoln's Sparrow

Swamp Sparrow

White-throated Sparrow

Sporadic or Localized Wintering Species

**Trumpeter Swan** - rare

Long-tailed Duck

White-winged Scoter

California Gull

Thayer's Gull



Northern Saw-whet Owl  
Steller's Jay  
Mountain Chickadee  
Pygmy Nuthatch  
Evening Grosbeak  
Red Crossbill  
Cassin's Finch

Primarily Spring and/or Fall Migrant Species:

Common Loon  
Western Grebe  
Eared Grebe  
Double-crested Cormorant  
American White Pelican  
American Bittern – possibly a rare nesting species  
White-faced Ibis – rare nesting species  
Greater White-fronted Goose  
Cinnamon Teal – rare nesting species  
Hooded Merganser  
Ruddy Duck – small numbers nest  
Osprey  
**Peregrine Falcon**  
**Sandhill Crane**  
**Whooping Crane**  
**Black Rail** – may be a rare nesting species  
Virginia Rail – rare nesting species; small numbers may over-winter  
Sora  
Black-bellied Plover  
**American Golden-Plover** - rare  
Semipalmated Plover  
**Piping Plover** – rare  
Black-necked Stilt - rare  
Greater Yellowlegs  
Lesser Yellowlegs  
**Solitary Sandpiper** - rare  
Willet  
Spotted Sandpiper  
Whimbrel - rare  
**Hudsonian Godwit** - uncommon  
Semipalmated Sandpiper  
Least Sandpiper – may over-winter in small numbers  
**Western Sandpiper**  
White-rumped Sandpiper - uncommon  
Baird's Sandpiper  
Pectoral Sandpiper  
Stilt Sandpiper  
Long-billed Dowitcher  
Wilson's Snipe  
**Wilson's Phalarope**  
Red-necked Phalarope - rare  
Franklin's Gull

Forster's Tern  
Black Tern  
Black-billed Cuckoo – rare  
Rufous Hummingbird  
Olive-sided Flycatcher  
Hammond's Flycatcher - rare  
Dusky Flycatcher  
Least Flycatcher  
Plumbeous Vireo  
Bank Swallow  
Winter Wren  
Sedge Wren  
Marsh Wren – small numbers may over-winter  
Swainson's Thrush  
Hermit Thrush – small numbers may over-winter  
Gray Catbird  
American Pipit  
**Sprague's Pipit**  
Tennessee Warbler  
Nashville Warbler  
Orange-crowned Warbler  
Virginia Warbler - rare  
Chestnut-sided Warbler  
Townsend's Warbler  
Black-throated Green Warbler  
Black and White Warbler  
American Redstart  
Ovenbird  
Northern Waterthrush  
Mourning Warbler - rare  
MacGillivray's Warbler  
Wilson's Warbler  
Western Tanager  
Black-headed Grosbeak  
**Baird's Sparrow**  
Clay-colored Sparrow  
Chipping Sparrow  
Brewer's Sparrow  
**LeConte's Sparrow**  
Vesper Sparrow  
Yellow-headed Blackbird - sporadic nesting records  
Bobolink

## **Bird-Habitat Associations in the Shortgrass Prairie Region (BCR 18)**

### **Shortgrass Prairie Habitat:**

This is the most widespread habitat in the Shortgrass Prairie BCR and historically it covered nearly 70% of the region's acreage. Approximately 70-80% of the historic shortgrass prairie habitat has been converted to other land uses – primarily to cropland. Where shortgrass prairies exist today, they are used as rangeland/grazing land for domestic cattle. Shortgrass prairies are dominated by a small number of short-stature grass species including buffalo grass, blue grama and hairy grama, as well as by a diversity of low forbs. The structure of shortgrass prairies was maintained by a combination of grazing and seasonal drought. The effect of present-day continuous grazing has not been studied well but is probably not detrimental to the shortgrass prairie biotic community because of the strong influence that grazing had on this ecosystem historically. The Black-tailed Prairie Dog is not restricted to the shortgrass prairie ecosystem, but this habitat type supports the majority of prairie dog colonies in Oklahoma.

#### Species of Greatest Conservation Need

- Swainson's Hawk
- Ferruginous Hawk
- Scaled Quail
- Mountain Plover
- Long-billed Curlew
- Burrowing Owl
- Cassin's Sparrow
- McCown's Longspur

#### Other Representative Species of Conservation Interest

- Chihuahuan Raven
- Grasshopper Sparrow
- Lark Sparrow
- Lark Bunting

### **Mixed-grass Prairie Habitat:**

Mixed-grass prairie habitat occurs in two dominant forms in the Shortgrass Prairie BCR. Some of the mixed-grass prairie within the region (especially in the eastern half) is naturally occurring in floodplains and transitional slopes. These prairies are dominated by a diverse community of grasses and forbs that include side oats grama, little bluestem, sand bluestem, vine mesquite and alkali saccaton. However, most of the mixed-grass prairie habitat in this region occupies acres that are enrolled in the Conservation Reserve Program under the U.S. Department of Agriculture. These acres are formerly cropped land that is susceptible to wind erosion, and through the CRP program the landowner is paid to plant the acreage to perennial grass cover that is not grazed, mowed or burned without authorization from and an application to the USDA. These CRP acres are typically planted to Old World (yellow) bluestem, a warm-season bunch grass that is exotic to the U.S. and typically behaves as an invasive species. Some of the CRP fields that were originally planted to Old World bluestem have been over-seeded with the native little bluestem and a few forb species including sweet clover and Illinois bundle flower to improve their diversity and value to wildlife. A small percentage of CRP fields were planted to native grasses – primarily little bluestem and/or side oats grama. Mixed-grass prairie communities are structured by the influence of both grazing and periodic fire. Mixed-grass prairies most often occur on sites that experience light grazing pressure and rich soils that retain moisture.

#### Species of Greatest Conservation Need

- Short-eared Owl
- Lesser Prairie Chicken
- Northern Bobwhite
- Upland Sandpiper (usually as a migrant species)

- Loggerhead Shrike
- Cassin's Sparrow
- Baird's Sparrow (migrant)
- Chestnut-collared Longspur
- McCown's Longspur (secondary wintering habitat)
- Other Representative Species of Conservation Interest
  - Dickcissel (in/near flood plains)
  - Grasshopper Sparrow
  - Vesper Sparrow (migrant)
  - Lark Sparrow
  - Lark Bunting
  - Eastern Meadowlark

**Sand Sagebrush Shrubland Habitat:**

Sand sagebrush shrublands occur on sites with deep, sandy soils throughout the region but are more prevalent in the eastern half where average rainfall is higher. The dominant woody species in this shrubland community is sand sagebrush, although smaller amounts of sand plum and skunkbrush can be present. Shrub density is variable and is influenced by soil condition, rainfall, current and historic grazing pressure and fire frequency. Shrub cover is often highest in sites with sandier soils (especially stabilized dunes), higher historic grazing pressure and lower fire frequency. Plant diversity is often high in this community and includes many species of herbaceous forbs. In some protected and relatively mesic areas within stabilized dune systems there may be small groupings of trees including western soapberry and netleaf hackberry.

Species of Greatest Conservation Need:

- Lesser Prairie Chicken
- Northern Bobwhite
- Scaled Quail
- Bell's Vireo
- Loggerhead Shrike
- Painted Bunting
- Cassin's Sparrow

Other Representative Species of Conservation Interest:

- Common Poorwill
- Brewer's Sparrow (migrant)
- Field Sparrow
- Lark Sparrow
- Eastern Meadowlark
- Bullock's Oriole

**Pinyon-Juniper Woodland Habitat:**

This habitat type is limited in abundance in Oklahoma and is found only in the northwestern corner of the panhandle in the vicinity of Black Mesa where the soil is both clay and rocky. As the name implies, this is an open woodland community dominated by oneseed juniper and pinyon pine, with an understory that is comprised of shortgrass prairie grasses and forbs and small groupings of skunkbrush and mountain mahogany. In a few locations on relatively mesic slopes, there are small numbers of ponderosa pine, Rocky Mountain juniper and gamble oak. Fire is infrequent in this dry community, but the vegetation structure is influenced by the combination of drought, grazing and fire.

Species of Greatest Conservation Need

- Prairie Falcon
- Scaled Quail

Pinyon Jay  
Juniper Titmouse  
Other Representative Species of Conservation Interest  
Golden Eagle  
Common Poorwill  
Western Scrub Jay  
Canyon Wren  
Curve-billed Thrasher  
Canyon Towhee  
Rufous-crowned Sparrow  
Black-throated Sparrow

**Riparian Woodland Habitat:**

This habitat occurs along intermittent and perennial portions of the Cimarron River and the Beaver River and their major tributaries. Unlike riparian habitats in eastern Oklahoma that support a diverse community of tree and shrub species, the riparian woodlands within the Shortgrass Prairie BCR are dominated by eastern cottonwood and smaller numbers of black willow, sandbar willow, American elm, western soapberry and honey locust. The structure of this community has been altered substantially by the encroachment of salt cedar (tamarisk) that is a large, invasive shrub that is native to Asia and has become established in the western U.S. The full effects of invasive salt cedar are not known, but they may compete substantially for water and space with native trees and have a negative effect on long-term habitat quality. Salt cedar plants may be used as nesting cover by edge species such as Lark Sparrow and Field Sparrow, but they do not appear to be used substantially by most riparian-dependent birds.

Species of Greatest Conservation Need:

Northern Bobwhite  
Lewis's Woodpecker (Black Mesa area)  
Red-headed Woodpecker  
Bell's Vireo  
Bullock's Oriole

Other Representative Species of Conservation Interest

Yellow-billed Cuckoo  
Bewick's Wren  
Lazuli Bunting  
Field Sparrow  
Orchard Oriole

**Herbaceous Wetland Habitat:**

Herbaceous wetlands encompass a broad range of plant communities that include wet playas embedded within shortgrass prairie habitat, season wetlands within ravines and the flood plains of streams, and wetlands along the margins of the small number of man-made impoundments. Playa basins are the most widespread herbaceous wetlands but are also the most ephemeral and unpredictable wetlands in the region because they typically hold water for only short periods of time (measured in weeks) during periods of above-average rainfall and low evaporation. Playas encompass a range of vegetation communities as a result of the varied land uses of playas. Farmed playas typically support an herbaceous community dominated by annual forbs and grasses, while grazed/un-tilled playas are dominated by perennial sedges and grasses. Small, seasonal wetlands occur in the broad flood plains of the Beaver and Cimarron rivers. These are often dominated by perennial vegetation and may be encroached upon by invasive salt cedar shrubs.

Species of Greatest Conservation Need

Northern Pintail  
Sandhill Crane (migrant)  
Black Rail (rare migrant, but possible nesting species)  
Snowy Plover (Optima Lake only)  
Long-billed Curlew (primarily associated with playas)  
Upland Sandpiper  
Hudsonian Godwit (rare migrant)  
Western Sandpiper (migrant)  
Wilson's Phalarope (migrant)

Other Representative Species of Conservation Interest

American Bittern (primarily a migrant)  
White-faced Ibis (rare nesting species)  
American Avocet (migrant and rare nesting species)  
Baird's Sandpiper (migrant)  
Stilt Sandpiper (migrant)  
Long-billed Dowitcher (migrant)

## Mixed-grass Prairie Bird Conservation Region (BCR 19)

The Mixed-grass Prairie Bird Conservation Region is the largest BCR in Oklahoma and encompasses most of the western half of the state except for the panhandle and south-central regions of the state. Approximately 302 species of birds can be found here including 51 species that are classified as Species of Greatest Conservation Need in Oklahoma. In keeping with its large size, this BCR contains a diversity of habitat types including eight habitat classifications that are important to avian species of greatest conservation need: mixed-grass prairie, shinnery oak shrublands, sand sagebrush shrublands, post oak woodlands (western crosstimbers), herbaceous wetlands, riparian woodlands, tallgrass prairie and mesquite/rebber juniper woodlands. Millions of acres within this BCR have been modified and converted into crop fields, non-native pasture grasses (primarily Bermuda grass), and urban/residential areas, but these have relatively little conservation value to most avian species of greatest conservation need and are not addressed in this report. Many small and large man-made reservoirs have been constructed in this BCR for flood control. These have value to water birds such as Trumpeter Swans, Lesser Scaup and Canvasback but will not be evaluated or discussed in this report.

Important conservation issues within the Mixed-grass Prairie BCR include:

- conversion of native prairies and shrublands to crop fields and highly-managed pastures
- herbicide treatment of shinnery oak and post oak shrublands to locally eradicate woody cover
- widespread suppression of fire throughout the region that has allowed for the proliferation and encroachment of eastern redcedar into most prairie and shrubland communities
- channelization of streams and the loss of floodplain wetlands and riparian woodlands
- alteration of historic grazing patterns from seasonal or biennial to continuous or annual grazing across most prairie and shrubland communities; this alters plant diversity and vegetation structure
- siltation of and farming of wetlands within flood plains and the Cimarron and North Canadian river terraces
- fragmentation of native habitats by roads, utility lines, pipelines, wind energy development, pastureland, cropland, homes, fences and windbreaks
- increased impact of small carnivores and cowbirds on nesting success as an indirect consequence of habitat fragmentation and alteration

Below is a listing of the avian species that regularly occur in the Mixed-grass Prairie BCR. All species are arranged by their season(s) of residence in the state. The species that are shown in **bold** print are Species of Greatest Conservation Need in Oklahoma.

Species Present Year-round Species (some species are migratory and have larger populations in the winter or breeding season)

Canada Goose  
Mallard  
Great Blue Heron  
Cooper's Hawk  
Red-shouldered Hawk (eastern part of BCR)  
Red-tailed Hawk  
American Kestrel (wintering population is larger)  
Ring-necked Pheasant (northern part of BCR)  
Wild Turkey  
**Lesser Prairie Chicken** (northern part of BCR)  
**Northern Bobwhite**  
**Scaled Quail** (western edge of BCR)  
Killdeer

Mourning Dove  
Rock Pigeon  
Eurasian Collared Dove  
Greater Roadrunner  
**Barn Owl**  
Eastern Screech-Owl  
Great Horned Owl  
Barred Owl (eastern half of BCR)  
Belted Kingfisher  
**Red-headed Woodpecker** (breeding population is larger)  
Red-bellied Woodpecker  
**Golden-fronted Woodpecker** (southern part of BCR)  
Ladder-backed Woodpecker  
Downy Woodpecker  
Hairy Woodpecker  
Northern Flicker (wintering population is much larger)  
Horned Lark  
Blue Jay  
American Crow  
Carolina Chickadee  
Tufted Titmouse  
White-breasted Nuthatch (eastern part of BCR)  
Carolina Wren (eastern part of BCR)  
Bewick's Wren  
Rock Wren  
Eastern Bluebird  
American Robin  
Northern Mockingbird  
**Loggerhead Shrike**  
European Starling  
Northern Cardinal  
Field Sparrow  
Red-winged Blackbird  
Eastern Meadowlark  
Western Meadowlark  
Great-tailed Grackle  
Common Grackle  
Brown-headed Cowbird (breeding population is larger)  
House Finch  
American Goldfinch (much larger wintering population)  
House Sparrow

Species with Localized Year-round Populations

Pied-billed Grebe  
Double-crested Cormorant  
**Bald Eagle**  
American Coot  
White-winged Dove (southern part of BCR)  
Inca Dove (urban areas in southern part of BCR)  
Chihuahuan Raven (extreme western edge of BCR)  
Black-crested Titmouse (southwestern corner of BCR)



Verdin (extreme southwest corner of BCR)  
Canyon Wren  
Curve-billed Thrasher (southwestern corner of BCR)  
Rufous-crowned Sparrow

Species Present Primarily During the Summer Breeding Season

Wood Duck (small numbers may over-winter)  
Blue-winged Teal  
Great Egret  
**Little Blue Heron**  
**Snowy Egret**  
Cattle Egret  
Green Heron  
Black-crowned Night-Heron  
Yellow-crowned Night-Heron  
Turkey Vulture  
Mississippi Kite  
**Swainson's Hawk**  
Yellow-billed Cuckoo  
Chuck-will's-widow  
Common Nighthawk  
Common Poorwill  
Chimney Swift  
Ruby-throated Hummingbird (eastern part of BCR)  
Black-chinned Hummingbird (southern part of BCR)  
Eastern Wood-Pewee (eastern part of BCR)  
Eastern Phoebe (some over-winter in southern part of BCR)  
Great Crested Flycatcher  
Ash-throated Flycatcher  
Western Kingbird  
Eastern Kingbird  
Scissor-tailed Flycatcher  
White-eyed Vireo (rare; found in southern part of BCR)  
**Bell's Vireo**  
Red-eyed Vireo (eastern part of BCR)  
Warbling Vireo  
Purple Martin  
Northern Rough-winged Swallow  
Cliff Swallow  
Barn Swallow  
House Wren (northern part of BCR)  
Blue-gray Gnatcatcher  
Brown Thrasher (some over-winter in southern part of BCR)  
Black and White Warbler (eastern part of BCR)  
**Louisiana Waterthrush** (eastern part of BCR)  
Blue Grosbeak  
Indigo Bunting (eastern part of BCR)  
**Painted Bunting**  
Dickcissel  
**Cassin's Sparrow**  
Lark Sparrow

Grasshopper Sparrow  
Orchard Oriole  
Baltimore Oriole  
**Bullock's Oriole** (western part of BCR)

Uncommon Breeding Species/Edge of Range, but Common Migrants

Broad-winged Hawk – primarily in riparian and crosstمبر forest tracts  
Virginia Rail – herbaceous, seasonal marshes  
**Upland Sandpiper** – primarily in tallgrass and mixed-grass prairie remnants in northern BCR  
Spotted Sandpiper – primarily along Canadian and Cimarron rivers  
Tree Swallow – primarily in the vicinity of reservoirs  
Sedge Wren – wet tallgrass prairie and herbaceous wetlands  
Yellow Warbler – primarily in willow thickets and riparian forest  
Common Yellowthroat – primarily in riparian thickets  
Chipping Sparrow

Species with Localized Breeding Populations

White-faced Ibis  
**King Rail** - rare  
Common Moorhen  
**Snowy Plover**  
American Avocet – common migrant  
Black-necked Stilt  
**Least Tern**  
**Burrowing Owl**  
**Black-capped Vireo**  
**Prothonotary Warbler**

Sporadic or Accidental Breeding-Season Species (often weather/rainfall dependent)

Tricolored Heron  
Black-bellied Whistling Duck  
White-tailed Kite  
**Black Rail** (northern part of BCR)  
Vermillion Flycatcher  
Cave Swallow  
Lesser Goldfinch

Species Present Primarily During the Winter

Cackling Goose  
Snow Goose – winter locally  
Ross's Goose – winter locally  
Green-winged Teal  
**Northern Pintail**  
Northern Shoveler - small numbers may nest  
Gadwall  
American Wigeon  
**Canvasback**  
Redhead – rare nesting species  
Ring-necked Duck  
**Lesser Scaup**  
Greater Scaup – winter locally

Common Goldeneye  
Bufflehead  
Hooded Merganser – rare nesting species  
Common Merganser  
Ruddy Duck – rare nesting species  
Northern Harrier – rare nesting species  
Sharp-shinned Hawk  
Rough-legged Hawk  
**Ferruginous Hawk**  
Golden Eagle  
**Prairie Falcon**  
Merlin  
Bonaparte's Gull  
Ring-billed Gull  
Herring Gull  
**Short-eared Owl**  
Long-eared Owl - rare  
Yellow-bellied Sapsucker  
Red-breasted Nuthatch  
Brown Creeper  
Golden-crowned Kinglet  
Ruby-crowned Kinglet (more common as a migrant)  
Mountain Bluebird  
Cedar Waxwing  
Yellow-rumped Warbler  
Spotted Towhee  
American Tree Sparrow  
Savannah Sparrow  
Fox Sparrow  
Song Sparrow  
White-crowned Sparrow  
**Harris's Sparrow**  
Dark-eyed Junco  
Lapland Longspur  
**Smith's Longspur** (eastern part of BCR)  
**Chestnut-collared Longspur**  
**McCown's Longspur**  
Brewer's Blackbird  
Pine Siskin

Species with Localized or Sporadic Wintering Populations

**Trumpeter Swan** - rare  
Tundra Swan – rare  
Long-tailed Duck  
White-winged Scoter  
California Gull  
Thayer's Gull  
Snowy Owl  
Northern Saw-whet Owl  
Townsend's Solitaire  
Evening Grosbeak

Red Crossbill

Primarily Migrant Species but with Small Wintering Populations (often weather dependent)

Common Loon (winter on reservoirs)  
Horned Grebe (winter on reservoirs)  
Western Grebe (winters on reservoirs)  
Greater White-fronted Goose (winter in small numbers)  
Red-breasted Merganser (winter in small numbers on reservoirs)  
Wilson's Snipe  
Winter Wren  
Sage Thrasher  
Hermit Thrush  
American Pipit  
LeConte's Sparrow  
Vesper Sparrow  
Lincoln's Sparrow  
Swamp Sparrow  
White-throated Sparrow

Primarily Spring and/or Fall Migrant Species:

Eared Grebe (a few nesting records)  
American White Pelican  
American Bittern (possibly a rare nesting species)  
White-faced Ibis  
Cinnamon Teal (rare)  
Osprey  
**Peregrine Falcon**  
**Sandhill Crane** (some over-winter in south part of BCR)  
**Whooping Crane**  
**Black Rail**  
Virginia Rail (rare nesting species; small numbers over-winter)  
Sora  
Black-bellied Plover  
**American Golden Plover**  
Semipalmated Plover  
**Piping Plover** (rare)  
**Mountain Plover** (rare)  
Greater Yellowlegs  
Lesser Yellowlegs  
**Solitary Sandpiper** - rare  
Willet  
Spotted Sandpiper  
**Long-billed Curlew**  
Whimbrel - rare  
**Hudsonian Godwit** (uncommon)  
Marbled Godwit - rare  
Ruddy Turnstone - rare  
Semipalmated Sandpiper  
Least Sandpiper (may winter in small numbers)  
**Western Sandpiper**  
White-rumped Sandpiper

Baird's Sandpiper  
Sanderling (rare)  
Dunlin  
Pectoral Sandpiper  
Red Knot (rare)  
Stilt Sandpiper  
Long-billed Dowitcher  
Short-billed Dowitcher (rare)  
**Wilson's Phalarope** (a few nesting records)  
Red-necked Phalarope (rare)  
Franklin's Gull  
Sabine's Gull (rare)  
Forster's Tern  
Black Tern  
Black-billed Cuckoo (rare)  
Rufous Hummingbird  
Say's Phoebe  
**Willow Flycatcher**  
Alder Flycatcher  
Olive-sided Flycatcher  
Least Flycatcher  
Bank Swallow  
Marsh Wren (small numbers may over-winter)  
Swainson's Thrush  
Gray Catbird  
**Sprague's Pipit**  
Tennessee Warbler  
Nashville Warbler  
Orange-crowned Warbler  
Northern Parula  
Chestnut-sided Warbler (rare)  
Magnolia Warbler (rare)  
Blackburnian Warbler (rare)  
Black-throated Green Warbler  
American Redstart  
Ovenbird  
Northern Waterthrush  
Mourning Warbler  
Wilson's Warbler  
Yellow-breasted Chat (possibly a rare nesting species)  
Western Tanager  
Black-headed Grosbeak  
Rose-breasted Grosbeak  
Lazuli Bunting (a few nesting records)  
Lark Bunting (some overwinter in southern part of BCR)  
**Baird's Sparrow**  
Clay-colored Sparrow  
Brewer's Sparrow  
Yellow-headed Blackbird  
**Rusty Blackbird** (some overwinter in eastern part of BCR)  
Bobolink

## **Bird-Habitat Associations within the Mixed-grass Prairie Region (BCR 19)**

### **Mixed-grass Prairie Habitat:**

Mixed-grass prairie habitats are diverse in the Central Mixed-grass Prairie BCR. In the western edge of the region, mixed-grass prairie transitions into shortgrass prairie and the species composition is dominated by side oats grama, hairy grama, little bluestem, sand bluestem and vine mesquite. In the eastern half of the BCR, the mixed-grass prairie transitions to tallgrass prairie such that the species composition is dominated by little bluestem, big bluestem, plains lovegrass and switchgrass. In the north-central part of the BCR and the southwestern part of the BCR, the prairie is underlain by shallow gypsum formations that create rocky, thin, dry soil conditions that favor little bluestem, purple threeawn grass, sideoats grama, and hairy tridens. In some agriculturally-dominated landscapes, there are many former crop fields that have been planted to perennial grass monocultures under the Conservation Reserve Program of the U.S. Department of Agriculture to prevent wind erosion of the soil. Because these fields are rarely hayed, grazed or burned, they function structurally as mixed-grass prairies. In the northern part of the BCR, the majority of these CRP fields have been planted to Old World (yellow) bluestem, a warm-season bunch grass that is exotic to the U.S. and typically behaves as an invasive species. Some of the CRP fields that were originally planted to Old World bluestem have been over-seeded with the native little bluestem and a few forb species including sweet clover and Illinois bundle flower to improve their diversity and value to wildlife. In the southern part of the BCR, many of the CRP fields have been planted to weeping lovegrass, an exotic species from Africa. Mixed-grass grasslands frequently occur also on sites that have been tilled historically and then allowed to go fallow and then out of crop production. These sites are often colonized by early-succession and prolific species of grasses and forbs, and because they are frequently grazed, the plant community develops under the influence of grazing as well. Mixed-grass prairie communities are diverse in their species composition and structure and they are influenced by both grazing and periodic fire.

#### Species of Greatest Conservation Need:

- Short-eared Owl (primarily in the winter months)
- Lesser Prairie Chicken (northern part of BCR)
- Northern Bobwhite
- Scaled Quail (western edge of the BCR)
- Upland Sandpiper (migrant species but some nesting in northern part of BCR)
- Loggerhead Shrike
- Sprague's Pipit (migrant)
- Cassin's Sparrow
- Baird's Sparrow (migrant)
- Chestnut-collared Longspur (wintering species)
- McCown's Longspur (wintering species)
- Smith's Longspur (wintering species, especially on disturbed sites)

#### Other Representative Species of Conservation Interest:

- Common Nighthawk
- Dickcissel
- Grasshopper Sparrow
- Vesper Sparrow (migrant)
- Lark Sparrow
- Lark Bunting (migrant and occasional winter resident)
- Eastern Meadowlark

**Riparian Woodland Habitat:**

This habitat is comprised of forests and woodlands growing adjacent to or along the margins of perennial and intermittent streams and along the large river systems such as the North Canadian, Canadian and Washita rivers. In this region of the state, riparian forests typically form in the flood plains of stream and rivers within 300 feet of the stream channel. They are usually dominated by a small number of deciduous tree species – black willow, eastern cottonwood, American elm, green ash, sugarberry, red mulberry and western soapberry. In some areas, riparian forests include bur oak, chinkapin oak, black walnut, boxelder and Kentucky coffee trees. In some watershed in the western portion of the BCR, the exotic salt cedar has become established and has altered the structure of the riparian zone by increasing the density of the understory and thinning out the canopy through competition with native trees.

**Species of Greatest Conservation Need:**

- Red-headed Woodpecker
- Golden-fronted Woodpecker (open woodlands in southwestern part of BCR)
- Prothonotary Warbler (nest in sites with mature trees in eastern part of BCR)
- Louisiana Waterthrush (nest primarily in the eastern part of the BCR)
- Bell's Vireo (nest in early-succession, willow or shrub-dominated riparian areas)
- Rusty Blackbird (winter habitat)
- Bullock's Oriole (nest in open, riparian woodlands in western part of BCR)

**Other Representative Species of Conservation Interest:**

- Mississippi Kite
- Yellow-billed Cuckoo
- Chuck-will's Widow
- Verdin
- Carolina Chickadee
- Baltimore Oriole

**Upland Oak Woodland and Shrubland (Western Crosstimbers)**

This forest/woodland community is comprised of mainly deciduous trees on upland, sandy or rocky soils. The dominant trees include post oak and blackjack oak with small percentages of chittamwood, redbud, netleaf hackberry, eastern redcedar and shinnery oak. The majority of this habitat is found on stabilized dunes along the Cimarron, North Canadian and Canadian rivers in the eastern half of the BCR. It is also found around the granite outcrops west of the Wichita Mountains. In most locations, this upland oak community exists as short, bushy thickets that rarely exceed 40 feet in height. As a result of reduced fire frequency, these forest tracts often contain a higher canopy percentage of eastern redcedar than they did historically. On the north-facing slopes of the Wichita Mountains and in some of the deeper sandstone canyons in Caddo County, this community takes on a more forest-like structure with tall trees (greater than 40 feet in height) and greater tree species diversity.

**Species of Greatest Conservation Need:**

- Black-capped Vireo (nesting very locally but formerly more widespread)
- Painted Bunting
- Harris's Sparrow (wintering habitat)
- Northern Bobwhite

**Other Representative Species of Conservation Interest:**

- Mississippi Kite
- Yellow-billed Cuckoo
- Carolina Chickadee
- Bewick's Wren
- Brown Thrasher
- Rufous-crowned Sparrow
- Field Sparrow
- Lark Sparrow

**Shinnery Oak Shrubland and Transitional Shrubland Habitats:**

The shinnery oak shrubland community occurs on stabilized dunes and deep sandy soils in parts of Harmon, Beckham, Roger Mills, Ellis and Woodward counties in the western part of the BCR. As its name implies, this is a shrubland community that is dominated by shinnery (Harvard) oak but also includes lesser abundances of sand plum, sand sagebrush, skunkbrush sumac and beach plum shrubs. The dominant woody plant in the community, shinnery oak, occurs as several growth forms that influence the structure of this community. In some places, shinnery oak is genetically pure and occurs as thickets of low dense shrubs three to twelve feet in height. In other locations, shinnery oak has hybridized with post oak and created tall mottes of oak trees that are often 15 to 25 feet in height. Oak thickets can be closely spaced, especially where they are low in stature, or they can be widely spaced. A similar community, but lacking shinnery oak, sometimes develops in the eastern part of the BCR in the transitional areas between riparian woodlands and grasslands, and in prairie sites where fire has been excluded for many decades. These sites typically resemble the "old field" sites of eastern Oklahoma and are deciduous shrubs and early succession upland trees including sand plum, Mexican plum, roughleaf dogwood, persimmon, hackberry and sumac. Fire is an infrequent but important structuring influence of each of these shrubland communities and is necessary to limit the abundance of eastern redcedar. As a result of widespread fire suppression and the proliferation of eastern redcedar, redcedar has increased in abundance in many areas where these shrubland communities occur.

**Species of Greatest Conservation Need:**

- Lesser Prairie Chicken (nesting and roosting habitat)
- Bell's Vireo (primary nesting habitat)
- Northern Bobwhite (primary nesting habitat)
- Painted Bunting (secondary nesting habitat)
- Harris's Sparrow (wintering habitat)
- LeConte's Sparrow (wintering habitat)

**Other Representative Species of Conservation Interest:**

- Scissor-tailed Flycatcher
- Bewick's Wren
- Dickcissel
- Field Sparrow
- Lark Sparrow
- Eastern Meadowlark

**Sand Sagebrush Shrubland Habitat:**

Sand sagebrush shrublands occur on sites with deep, sandy soils in the northwestern part of the region. The dominant woody species in this shrubland community is sand sagebrush, although smaller amounts of sand plum and skunkbrush may be present. Shrub density is variable and is influenced by soil condition, rainfall, current and historic grazing pressure and fire frequency. Shrub cover is often highest in sites with sandier soils (especially stabilized dunes), higher historic grazing pressure and lower fire frequency. Plant diversity is often high in this community and includes many species of herbaceous forbs. In some protected and relatively mesic areas within stabilized dune systems there may be groves of small trees including western soapberry and netleaf hackberry.

**Species of Greatest Conservation Need:**

- Lesser Prairie Chicken
- Northern Bobwhite
- Scaled Quail (western edge of the BCR)
- Bell's Vireo (sites with sand plum and skunkbrush)
- Loggerhead Shrike
- Cassin's Sparrow



Bullock's Oriole  
Other Representative Species of Conservation Interest:  
Common Poorwill  
Red-headed Woodpecker  
Scissor-tailed Flycatcher  
Brewer's Sparrow (migrant)  
Lark Sparrow  
Field Sparrow

#### **Tallgrass Prairie Habitat:**

Tallgrass prairies occur on low-lying sites with sandy or rich soils, especially in the eastern half of the BCR. These sites are dominated by warm-season bunch grasses and a diversity of herbaceous forbs. The most frequent grasses include big bluestem and switchgrass. Tallgrass prairies were historically maintained by periodic fire that helped to suppress encroachment by eastern redcedar and other woody plants. In the present day, these prairies are usually maintained by grazing or haying. Tallgrass prairies often have a very small shrub component and a sparse canopy of trees (<3%). Many of the nesting birds associated with prairies are somewhat area-sensitive and large tracts (over 500 acres) of prairie are needed to support many of the species of conservation need.

#### Species of Greatest Conservation Need:

Greater Prairie Chicken (primary nesting habitat) (very local)  
Northern Bobwhite (secondary nesting habitat)  
Swainson's Hawk (secondary nesting habitat)  
American Golden Plover (migration stop over habitat)  
Upland Sandpiper (primary nesting habitat) (very local)  
Short-eared Owl (wintering habitat)  
Sprague's Pipit (migration stop over habitat)  
LeConte's Sparrow (primary wintering habitat)  
Chestnut-collared Longspur (primary wintering habitat)  
Smith's Longspur (secondary wintering habitat)

#### Other Representative Species of Conservation Interest:

Northern Harrier  
Dickcissel (primary nesting habitat)  
Grasshopper Sparrow  
Lark Sparrow  
Eastern Meadowlark

#### **Mesquite and Red-berry Juniper Woodland Habitat**

This is a dry, open woodland community that occurs on clay and gypsum soils in the southwestern portion of the BCR (Beckham, Greer, Harmon, Kiowa counties). The dominant trees are red-berry (Pinchot) juniper (primarily on steeply sloping soils) and mesquite on level and thin soils. This community is uncommon and its historic condition is poorly understood. It is likely that this community is more dense and more dominated by mesquite than it was historically due to the current reduction in fire frequency.

#### Species of Greatest Conservation Need:

Northern Bobwhite  
Painted Bunting  
Cassin's Sparrow  
Harris's Sparrow

#### Other Representative Species of Conservation Interest:

Mississippi Kite

Bewick's Wren  
Brown Thrasher  
Curve-billed Thrasher  
Rufous-crowned Sparrow  
Lark Sparrow

### **Herbaceous Wetland Habitat**

Herbaceous wetlands occur infrequently and are scattered across the mixed-grass prairie region in association with the flood plains of streams and rivers. These wetlands include sloughs and backwater depressions adjacent to streams, seasonally-flooded sedge-dominated marshes and cattail marshes on the margins of man-made ponds and in slow-moving streams. Seasonally-flooded wetlands occur in interdune swales near the Canadian, North Canadian and Cimarron rivers, and there are areas of seasonal wetlands on natural terraces near the North Canadian and Cimarron rivers in Major, Kingfisher, Garfield and Blaine counties. Most herbaceous wetlands are seasonal habitats that are important to migrating shorebirds and rails and wintering waterfowl during periods of average and above average rainfall.

#### Species of Greatest Conservation Need:

Trumpeter Swan  
Northern Pintail  
Canvasback  
Little Blue Heron  
Snowy Egret  
Whooping Crane (migrant)  
Black Rail (migrant)  
American Golden Plover (migrant)  
Solitary Sandpiper (migrant)  
Upland Sandpiper (migrant)  
Long-billed Curlew (migrant)  
Hudsonian Godwit (migrant)  
Wilson's Phalarope

#### Other Representative Species of Conservation Interest:

American Bittern (migrant)  
American Avocet (migrant, rare breeding species)  
Lesser Yellowlegs  
White-rumped Sandpiper (migrant)  
Baird's Sandpiper (migrant)  
Long-billed Dowitcher (migrant)

## Oaks and Prairies Bird Conservation Region (BCR 21)

The Oaks and Prairies Bird Conservation Region encompasses most of central and east-central Oklahoma including the urbanized areas surrounding Ardmore, Norman, Oklahoma City, Stillwater and Tulsa. Approximately 312 species of birds can be found in this BCR including 53 species that are classified as Species of Greatest Conservation Need in Oklahoma. The Oaks and Prairies BCR is a transition area between prairie landscapes to the north and west and forest-dominated landscapes to the east. The region is a mosaic of dry, oak-dominated woodlands interspersed with regions of tallgrass prairie habitat (usually on tighter and clay soils). The conversion of habitat to cropland is not as widespread as it is in the prairie BCRs, but grazing is a common land use and habitat fragmentation is a serious issue because of the region's high human population. The primary habitat types that are important to bird conservation include oak woodlands, bottomland hardwood forests, tallgrass prairie, mixed-grass prairie, riparian forests and transitional shrublands between prairie and forest. These habitats are important to several nesting species of conservation interest including Black-capped Vireo, Bell's Vireo, Northern Bobwhite, Prothonotary Warbler and Painted Bunting.

Important issues in the conservation of birds in the Oaks and Prairies BCR include:

- widespread, regional fire suppression that has allowed the proliferation of eastern redcedar and their encroachment into prairies and woodlands
- conversion of native tallgrass and mixed-grass prairie tracts to non-native pasture grasses and crop fields
- clearing of bottomland hardwood forests for crop fields and highly-managed pastures
- channelization of streams and the loss of associated flood plain wetlands and riparian forests
- inundation and loss of riparian forest and bottomland hardwood forest habitat by reservoir construction
- fragmentation of land ownership that is reducing the average size of properties and facilitating low-density urban sprawl
- fragmentation of oak forests by roads, homes, pipelines, oil and gas development and utility lines
- herbicide treatment of oak forests to remove woody vegetation and convert to pasture
- alteration of the historic seasonal or periodic grazing pattern on grasslands to continuous, annual grazing that can alter plant diversity, alter vegetation structure and facilitate the spread of redcedar and exotic herbaceous plants
- localized encroachment of exotic plants into native habitats (e.g. Johnson grass, seracia lespedeza, privet, black locust)

Below is a listing of the avian species that regularly occur in the Oaks and Prairies BCR. These species are arranged by their season(s) of residence in the state. The species that are shown in **bold print** are Species of Greatest Conservation Need in Oklahoma.

Species Present Year-round Species (some species have larger winter or breeding season populations)

Pied-billed Grebe  
Canada Goose  
Great Blue Heron  
Cooper's Hawk  
Red-tailed Hawk  
Red-shouldered Hawk  
American Kestrel – the wintering population is larger  
Wild Turkey  
**Northern Bobwhite**

Killdeer  
 Mourning Dove  
 Rock Pigeon  
 Eurasian Collared Dove  
 Greater Roadrunner  
**Barn Owl**  
 Eastern Screech-Owl  
 Great Horned Owl  
 Barred Owl  
 Belted Kingfisher  
**Red-headed Woodpecker**  
 Red-bellied Woodpecker  
 Downy Woodpecker  
 Hairy Woodpecker  
 Northern Flicker (the wintering population is much larger)  
 Pileated Woodpecker  
 Blue Jay  
 American Crow  
 Carolina Chickadee  
 Tufted Titmouse  
 White-breasted Nuthatch  
 Carolina Wren  
 Bewick's Wren  
 Eastern Bluebird  
 American Robin  
 Northern Mockingbird  
**Loggerhead Shrike**  
 Northern Cardinal  
 Field Sparrow  
 Red-winged Blackbird  
 Eastern Meadowlark  
 Great-tailed Grackle  
 Common Grackle  
 Brown-headed Cowbird  
 House Finch  
 American Goldfinch (the wintering population is much larger)

Species with Localized, Year-round Populations

Black Vulture – Arbuckle Mountains  
**Greater Prairie Chicken** – transition areas with the tallgrass prairie  
 White-winged Dove (primarily in urban areas)  
 Inca Dove (in urban areas in southern counties)  
 Ladder-backed Woodpecker (southwestern edge of region)  
 Canyon Wren (Wichita Mountains)  
 Rock Wren (Wichita Mountains)  
 Rufous-crowned Sparrow (Wichita and Arbuckle Mountains)  
 Chipping Sparrow

Species Present Primarily During the Summer Breeding Season

Wood Duck – small numbers over-winter  
 Great Egret – very small numbers over-winter in southern counties

**Snowy Egret**  
**Little Blue Heron**  
Cattle Egret  
Green Heron  
Black-crowned Night-Heron – small numbers over-winter  
Yellow-crowned Night Heron  
Least Bittern - rare  
Turkey Vulture – year-round resident in southern counties  
Mississippi Kite  
Broad-winged Hawk  
**Swainson's Hawk**  
**King Rail** - rare  
**Snowy Plover** - rare  
**Least Tern** -rare  
Yellow-billed Cuckoo  
Common Nighthawk  
Chuck-will's-Widow  
Chimney Swift  
Ruby-throated Hummingbird  
Eastern Wood-Pewee  
Eastern Phoebe – small numbers over-winter in southern counties  
Great Crested Flycatcher  
Western Kingbird  
Eastern Kingbird  
Scissor-tailed Flycatcher  
Purple Martin  
Northern Rough-winged Swallow  
Cliff Swallow  
Barn Swallow  
Fish Crow  
House Wren  
Blue-gray Gnatcatcher  
Brown Thrasher – small numbers over-winter  
White-eyed Vireo  
**Bell's Vireo**  
Yellow-throated Vireo  
Warbling Vireo  
Red-eyed Vireo  
Northern Parula  
Black-and-white Warbler  
**Prothonotary Warbler**  
**Louisiana Waterthrush**  
**Kentucky Warbler**  
Yellow-breasted Chat  
Summer Tanager  
Blue Grosbeak  
Indigo Bunting  
**Painted Bunting**  
Dickcissel  
Lark Sparrow  
Grasshopper Sparrow

Orchard Oriole  
Baltimore Oriole

Uncommon Breeding Species/Edge of Range, but Common Migrants

Gray Catbird – primarily in residential neighborhoods and riparian forest  
Yellow Warbler – primarily in willow thickets and riparian forest  
Common Yellowthroat – primarily in riparian shrublands and seasonal wetlands

Sporadic, Very Local or Accidental Breeding Species

Black-bellied Whistling Duck  
Purple Gallinule  
Black-chinned Hummingbird  
Acadian Flycatcher  
Vermillion Flycatcher  
Ash-throated Flycatcher  
**Black-capped Vireo**  
Yellow-throated Warbler  
**Swainson's Warbler**  
**Cassin's Sparrow**  
**Bachman's Sparrow**  
Lesser Goldfinch

Species Present Primarily During the Winter

Double-crested Cormorant  
**Trumpeter Swan** - rare  
Tundra Swan – rare  
Snow Goose – winter locally  
Ross's Goose – winter locally  
Cackling Goose  
Green-winged Teal  
**Northern Pintail**  
Mallard – small numbers nest locally  
Northern Shoveler  
Gadwall  
American Wigeon  
Redhead  
**Canvasback**  
Ring-necked Duck  
**Lesser Scaup**  
Greater Scaup – winter locally on reservoirs  
Common Goldeneye  
Bufflehead  
Hooded Merganser – small numbers may nest  
Common Merganser  
Northern Harrier  
Sharp-shinned Hawk  
**Bald Eagle** – in recent years a few pairs now nest  
Rough-legged Hawk – primarily in northern counties  
**Ferruginous Hawk**  
Merlin  
**Prairie Falcon**

American Coot – small numbers nest locally  
 Wilson's Snipe  
**American Woodcock** – small numbers may nest  
 Bonaparte's Gull  
 Ring-billed Gull  
 Herring Gull  
 Long-eared Owl  
**Short-eared Owl**  
 Yellow-bellied Sapsucker  
 Horned Lark – a few nest locally  
 Red-breasted Nuthatch  
 Brown Creeper  
 Winter Wren  
 Golden-crowned Kinglet  
 Ruby-crowned Kinglet – more common as a migrant  
 Hermit Thrush  
 Cedar Waxwing  
 Yellow-rumped Warbler  
 Spotted Towhee  
 Eastern Towhee  
**LeConte's Sparrow**  
 American Tree Sparrow  
 Savannah Sparrow  
 Fox Sparrow  
 Song Sparrow  
 White-throated Sparrow  
 White-crowned Sparrow  
**Harris's Sparrow**  
 Dark-eyed Junco  
 Lapland Longspur  
**Smith's Longspur**  
**Chestnut-collared Longspur**  
 Western Meadowlark  
 Brewer's Blackbird  
**Rusty Blackbird**  
 Purple Finch  
 Pine Siskin

Primarily Migrant Species but with Small Wintering Populations (often weather dependent)

Common Loon – winter in small numbers on reservoirs  
 Horned Grebe – winter in small numbers on reservoirs  
 American White Pelican – winter in small numbers on reservoirs  
 Greater White-fronted Goose – winter in small numbers  
 Red-breasted Merganser – winter in small number on reservoirs  
 Ruddy Duck – winter in small numbers  
 Greater Yellowlegs – small numbers winter on rivers  
 Least Sandpiper – small numbers winter on rivers and reservoirs  
 Marsh Wren – small numbers over-winter  
 American Pipit – small numbers winter along rivers  
 Orange-crowned Warbler – small percentage over-winter  
 Vesper Sparrow – small percentage over-winter

Chipping Sparrow – small percentage over-winter  
Lincoln's Sparrow – small numbers over-winter  
Swamp Sparrow – small numbers over-winter

Sporadic or Accidental Wintering Species

Yellow-billed Loon  
Western Grebe  
Long-tailed Duck  
White-winged Scoter  
White-tailed Kite  
Northern Goshawk  
**Golden Eagle**  
California Gull  
Thayer's Gull  
Glaucous Gull  
Lesser Black-backed Gull  
Northern Saw-whet Owl  
**Burrowing Owl**  
Rock Wren  
Townsend's Solitaire  
Mountain Bluebird  
Pine Warbler  
**McCown's Longspur**  
Evening Grosbeak  
Red Crossbill

Primarily Spring and/or Fall Migrant Species:

Eared Grebe  
American Bittern  
White-faced Ibis  
Blue-winged Teal – rare nesting species, small numbers over-winter  
Cinnamon Teal - rare  
Osprey  
**Peregrine Falcon**  
**Sandhill Crane**  
Virginia Rail – rare and local nesting species; small numbers over-winter  
Sora  
Common Moorhen – rare and local nesting species  
**Whooping Crane**  
Black-bellied Plover  
**American Golden-Plover**  
Semipalmated Plover  
**Piping Plover** – rare  
American Avocet  
Black-necked Stilt - rare  
Lesser Yellowlegs  
**Solitary Sandpiper**  
Willet  
Spotted Sandpiper  
**Upland Sandpiper** – may nest locally in northern counties  
Whimbrel - rare



**Long-billed Curlew**

**Hudsonian Godwit**

Marbled Godwit – rare

Ruddy Turnstone

Sanderling – rare

Semipalmated Sandpiper

**Western Sandpiper** – rare

White-rumped Sandpiper

Baird's Sandpiper

Pectoral Sandpiper

Dunlin

Stilt Sandpiper

**Buff-breasted Sandpiper**

Long-billed Dowitcher

**Wilson's Phalarope**

Red-necked Phalarope - rare

Franklin's Gull

Sabine's Gull – rare

Forster's Tern – very small numbers over-winter in southern counties

Caspian Tern – rare

Common Tern – rare

Black Tern

Black-billed Cuckoo – rare

Common Poorwill – may nest locally in small numbers

Rufous Hummingbird – rare

Olive-sided Flycatcher

Alder Flycatcher

**Willow Flycatcher**

Yellow-bellied Flycatcher

Least Flycatcher

Tree Swallow – small numbers nest near reservoirs

Bank Swallow

Sedge Wren

Veery – rare

Gray-cheeked Thrush

Swainson's Thrush

**Wood Thrush** – rare; sporadic nesting species in northern counties

**Sprague's Pipit**

Blue-headed Vireo

Tennessee Warbler

Nashville Warbler

Chestnut-sided Warbler – rare

Magnolia Warbler – rare

**Prairie Warbler**

Black-throated Blue Warbler – rare

Black-throated Green Warbler

Blackburnian Warbler – rare

Blackpoll Warbler

Palm Warbler – rare

American Redstart

Ovenbird

Northern Waterthrush  
Mourning Warbler  
Wilson's Warbler  
Scarlet Tanager – rare breeding species in northern counties  
Black-headed Grosbeak – rare  
Rose-breasted Grosbeak – a few nesting records in northern counties  
Lazuli Bunting  
Clay-colored Sparrow  
Yellow-headed Blackbird  
Bobolink

### **Bird-Habitat Associations within the Oaks and Prairies Region (BCR 21)**

#### **Bottomland Hardwood Forest Habitat**

This habitat type is comprised of oak-dominated forests within the flood plains of low-gradient streams and small rivers. It also includes seasonally-flooded and semi-permanently flooded forested wetlands within the bottomland systems. These forests are dominated by shumard oak, bur oak, pecan, black walnut, sugarberry and green ash trees. Because of their mesic soils, many bottomland hardwood stands support abundant woody understories of plum, dogwood, blackhaw viburnum, and Carolina buckthorn. Small tracts of bottomland hardwood forest occur along many streams in the region, but the largest tracts can be found on the Deep Fork, Caney, lower Washita and Muddy Boggy rivers.

##### Species of Greatest Conservation Need:

American Woodcock  
Prothonotary Warbler  
Louisiana Waterthrush (secondary nesting habitat)  
Swainson's Warbler  
Rusty Blackbird

##### Other Representative Species of Conservation Interest:

Yellow-crowned Night Heron  
Yellow-billed Cuckoo  
Yellow-throated Vireo  
Acadian Flycatcher  
Yellow-throated Warbler  
Purple Finch

#### **Riparian Forest Habitat**

This habitat type is comprised of forests and woodlands growing adjacent to or along the margins of perennial and intermittent streams and along the larger river systems such as the Cimarron, North Canadian, Canadian and Red rivers. In the Oaks and Prairies region of the state, riparian forests typically occur within the flood plains of stream and rivers within 200 feet of the stream channel. They are usually dominated by black willow, eastern cottonwood, American elm, green ash, sugarberry and sycamore trees. In forested landscapes, riparian forests grade into upland or bottomland hardwood forest types. One unique riparian community within this BCR occurs along the Blue River where the seaside alder is a dominant riparian tree/shrub. In grassland landscapes, riparian zones may be comprised of more open woodland and shrubland vegetation communities. In these areas, plums, roughleaf dogwood and sandbar willow are common.

##### Species of Greatest Conservation Need:

American Woodcock  
Red-headed Woodpecker

Prothonotary Warbler (secondary nesting habitat)  
Louisiana Waterthrush  
Kentucky Warbler (secondary nesting habitat)  
Bell's Vireo (in riparian shrub/thickets)  
Rusty Blackbird

Other Representative Species of Conservation Interest:

Yellow-crowned Night Heron  
Yellow-billed Cuckoo  
Baltimore Oriole  
Purple Finch

**Mesic Oak Forest Habitat**

Mesic oak forest stands are typically small within this region of the state and are often embedded within larger upland oak forest and woodland mosaics on the lower slopes of hills, north-facing slopes and terraces adjacent to flood plains. They may occur also in canyons and ravines in rugged sandstone and limestone terrain such as the Arbuckle Mountains and sandstone canyon lands in Caddo County. Mesic oak forest are usually dominated by post oaks, but also contain chinkapin oak, black oak and bur oak trees, and they often have abundant woody understory vegetation.

Species of Greatest Conservation Need:

Kentucky Warbler  
American Woodcock

Other Representative Species of Conservation Interest:

Yellow-billed Cuckoo  
Chuck-wills-widow  
Eastern Wood-Pewee  
Carolina Chickadee  
Yellow-throated Vireo  
Summer Tanager

**Upland Oak Forest and Woodland Mosaic**

This habitat is a complex mosaic of oak-dominated, deciduous forests and woodlands and it is a signature habitat of the Oaks and Prairies BCR. This habitat is widespread and frequently occurs on upland sites with coarse or sandy soils such as sandstone ridges, stabilized dunes and rocky limestone or granite-based soils in the Arbuckle and Wichita mountains respectively. These forests and woodlands are known regionally as the "Crosstimbers" and they are dominated by post oak, blackjack oak, black hickory, and black oak trees. They occur in a gradient of canopy conditions from closed canopy forests (especially on rugged terrain) to open-canopy woodlands on sites that are level, or have sandy soils.

Species of Greatest Conservation Need:

Painted Bunting  
Harris's Sparrow  
Northern Bobwhite  
Red-headed Woodpecker

Other Representative Species of Conservation Interest:

Mississippi Kite  
Yellow-billed Cuckoo  
Chuck-wills-widow  
Carolina Chickadee  
Brown Thrasher  
Summer Tanager

### **Dry Oak Woodland and Shrubland Habitat**

In the western portion of the Oaks and Prairies BCR, stunted or shrubby thickets of post oak and blackjack oak trees grow on thin, dry, drought-prone soils. These thickets are especially common in areas where the soil is thin and lies over sandstone or granite such as in the Wichita Mountains and the canyon lands of Caddo County. In those areas, stands of oak thickets may measure in the hundreds of acres. This habitat type may superficially resemble second-growth or early succession stands, but the community composition may remain stable for many decades because of the stress created by periodic drought or fire. Oak thickets are especially important nesting habitat for the federally endangered Black-capped Vireo.

#### Species of Greatest Conservation Need:

- Black-capped Vireo (primary nesting habitat) (very locally occurring)
- Painted Bunting
- Harris's Sparrow (wintering habitat)
- Northern Bobwhite

#### Other Representative Species of Conservation Interest:

- Bewick's Wren
- Brown Thrasher
- Field Sparrow
- Rufous-crowned Sparrow (locally occurring)

### **Deciduous Shrubland Transition Habitat**

This habitat type occurs throughout the BCR in transition areas between tracts of tallgrass prairie and oak woodland, and between tallgrass prairies and riparian woodlands. This habitat also may develop with prairie sites where fire has been excluded for an extended period, and in abandoned crop fields and pastureland that have been allowed to grow back into native vegetation (e.g. "old field" habitat). Transitional shrublands are dominated by sand plum and American plum, as well as roughleaf dogwood, sumac, common persimmon and early-succession trees such as hackberry and American elm. Fire is often infrequent but it is an important structuring influence in this shrubland community and it is necessary to limit the abundance of eastern redcedar. As a result of widespread fire suppression within this region, eastern redcedar has increased in abundance in many areas where shrubland communities occur.

#### Species of Greatest Conservation Need:

- Bell's Vireo (primary nesting habitat)
- Northern Bobwhite
- Painted Bunting
- Harris's Sparrow (wintering habitat)

#### Other Representative Species of Conservation Interest:

- Scissor-tailed Flycatcher
- Bewick's Wren
- Brown Thrasher
- Dickcissel
- Field Sparrow
- Lark Sparrow

### **Tallgrass Prairie Habitat**

The tallgrass prairie is another signature community within the Oaks and Prairies BCR. It occurs in bands through the region on extensive upland sites with clay or tight soils. Tallgrass prairies are dominated by warm-season bunch grasses such as big bluestem, Indian grass and switch grass, and by a diversity of herbaceous forbs. This community is shaped and maintained by frequent fires and to a smaller extent by periodic grazing. The habitat usually contains a very small component of shrub cover

and a very sparse canopy of trees (<3% total woody cover). Many prairies have been plowed and converted to crop fields and highly managed pasture lands planted to Bermuda grass or tall fescue. Where prairies remain, they are used for grazing cattle or they are annually cut for hay. In both land-use scenarios, the historic frequencies of fire and grazing have been altered (fire frequency greatly diminished and grazing frequency greatly increased). Several of the avian Species of Greatest Conservation Need that depend upon tallgrass prairie habitat are area-sensitive to some degree and require large tracts of grassland (e.g. over 500 acres) for suitable nesting sites.

Species of Greatest Conservation Need:

- Northern Bobwhite
- Swainson's Hawk (western part of BCR)
- American Golden Plover (migration stop over habitat)
- Upland Sandpiper (migration stop over habitat, but a rare and very local nesting species)
- Sprague's Pipit (migration stop over habitat)
- Dickcissel (primary nesting habitat)
- LeConte's Sparrow (wintering habitat)
- Chestnut-collared Longspur (wintering habitat)
- Smith's Longspur (wintering habitat – often in disturbed areas)

Other Representative Species of Conservation Interest:

- Grasshopper Sparrow
- Lark Sparrow
- Eastern Meadowlark

### **Herbaceous Wetland Habitat**

Herbaceous wetlands occur infrequently in the Oaks and Prairies BCR and are usually occur within the flood plains of streams and rivers. These wetlands include sloughs and backwater depressions adjacent to stream and river channels, and seasonally or permanently-flooded sedge or cattail marshes on the margins of man-made ponds and slow-moving streams. Among the areas where seasonally-flooded, herbaceous wetlands occur are the flood plains of the Deep Fork of the Canadian River, the Canadian River, Salt Creek and the Red River.

Species of Greatest Conservation Need:

- Trumpeter Swan
- Northern Pintail
- Canvasback
- Little Blue Heron
- Snowy Egret
- Whooping Crane (migrant)
- Black Rail (migrant)
- American Golden Plover (migrant)
- Solitary Sandpiper (migrant)
- Upland Sandpiper (migrant)
- Long-billed Curlew (migrant)
- Hudsonian Godwit (migrant)
- Wilson's Phalarope

Other Representative Species of Conservation Interest:

- American Bittern (migrant)
- Least Bittern
- Lesser Yellowlegs
- White-rumped Sandpiper (migrant)
- Baird's Sandpiper (migrant)
- Long-billed Dowitcher (migrant)

### **Eastern Tallgrass Prairie BCR (BCR 22)**

Approximately 285 species of birds regularly occur in the Tallgrass Prairie portion of Oklahoma. This includes 47 of the species that are classified as Species of Greatest Conservation Need in Oklahoma, although eleven of those species occur irregularly or in very small numbers within the BCR.

Approximately 118 species have at least a small nesting population within the BCR, and this region is especially important to tallgrass prairie-dependent birds such as the Henslow's Sparrow, Upland Sandpiper, Greater Prairie Chicken and Loggerhead Shrike, and to transitional shrubland species such as the Bell's Vireo and Northern Bobwhite. Important habitat types within this region include: bottomland hardwood forest, riparian forest, upland oak woodlands, tallgrass prairies and transitional shrublands.

Important issues in the conservation of birds in the Eastern Tallgrass Prairie BCR include:

- over-use of fire in the Flint Hills subregion to the point that many prairie tracts are burned annually and do not contain sufficient standing vegetation in the early spring to meet the needs of some prairie-nesting birds such as Henslow's Sparrow and Greater Prairie Chicken.
- widespread fire suppression in the eastern portion of the region that has allowed the proliferation and expansion of woody plants such as eastern redcedar into prairies and woodlands
- conversion of native tallgrass prairie tracts in the eastern portion of the region into non-native pasture grasses (primarily tall fescue) and crop fields
- clearing and conversion of bottomland hardwood forests for crop fields and fescue pastures
- clearing of vegetation along streams and the loss of associated flood plain wetlands and riparian forests
- inundation and loss of riparian forest and bottomland hardwood forest habitat by reservoir construction
- fragmentation of prairies by roads, homes, fences, oil and gas development and utility lines
- broadleaf herbicide treatment of prairies that has reduced forbs density and diversity
- alteration of the historic seasonal or periodic grazing pattern on grasslands to continuous, annual grazing that can alter plant diversity, alter vegetation structure and facilitate the spread of redcedar and exotic herbaceous plants
- localized encroachment of exotic plants into native habitats (e.g. Johnson grass, fescue, privet, multiflora rose)

Below is a listing of the avian species that regularly occur in the Tallgrass Prairie BCR. All of the species are arranged by their season(s) of residence in the state. The species that are shown in **bold print** are Species of Greatest Conservation Need in Oklahoma.

Species Present Year-round Species (some species have larger winter or breeding season populations)

- Pied-billed Grebe (small breeding population)
- Canada Goose
- Wood Duck (breeding-season population is larger)
- Mallard (wintering population is much larger)
- Great Blue Heron
- Cooper's Hawk
- Bald Eagle** (wintering population is larger)
- Red-tailed Hawk
- Red-shouldered Hawk
- American Kestrel (wintering population is larger)
- Wild Turkey
- Northern Bobwhite**
- Greater Prairie Chicken**
- American Coot (wintering population much larger)

Killdeer  
American Woodcock (rare)  
Mourning Dove  
Rock Pigeon  
Eurasian Collared Dove  
Greater Roadrunner  
**Barn Owl**  
Eastern Screech-Owl  
Great Horned Owl  
Barred Owl  
Belted Kingfisher  
**Red-headed Woodpecker**  
Red-bellied Woodpecker  
Downy Woodpecker  
Hairy Woodpecker  
Northern Flicker (winter population is larger)  
Pileated Woodpecker  
Horned Lark  
**Loggerhead Shrike**  
Blue Jay  
American Crow  
Carolina Chickadee  
Tufted Titmouse  
White-breasted Nuthatch  
Carolina Wren  
Bewick's Wren  
Eastern Bluebird  
American Robin  
Northern Mockingbird  
European Starling  
Northern Cardinal  
Field Sparrow  
Red-winged Blackbird  
Eastern Meadowlark  
Great-tailed Grackle  
Common Grackle  
Brown-headed Cowbird  
House Finch  
American Goldfinch (wintering population is larger)  
House Sparrow

Species Present Primarily During the Summer Breeding Season

Great Egret  
**Snowy Egret**  
**Little Blue Heron**  
Cattle Egret  
Green Heron  
Black-crowned Night-Heron -rare  
Yellow-crowned Night Heron  
Least Bittern - rare  
Turkey Vulture

Broad-winged Hawk  
**Swainson's Hawk** - rare and local  
**King Rail** - rare  
**Least Tern** -rare  
 Yellow-billed Cuckoo  
 Common Nighthawk  
 Chuck-will's-Widow  
 Chimney Swift  
 Ruby-throated Hummingbird  
 Eastern Wood-Pewee  
 Eastern Phoebe  
 Great Crested Flycatcher  
 Western Kingbird  
 Eastern Kingbird  
 Scissor-tailed Flycatcher  
 Purple Martin  
 Northern Rough-winged Swallow  
 Cliff Swallow  
 Barn Swallow  
 White-eyed Vireo  
**Bell's Vireo**  
 Yellow-throated Vireo – nests locally  
 Warbling Vireo  
 Red-eyed Vireo  
 Fish Crow  
 House Wren  
 Blue-gray Gnatcatcher  
 Brown Thrasher – small numbers over-winter  
 Northern Parula  
 Yellow-throated Warbler – nests locally  
 Black-and-white Warbler  
**Prothonotary Warbler**  
**Louisiana Waterthrush**  
**Kentucky Warbler**  
 Common Yellowthroat  
 Yellow-breasted Chat  
 Summer Tanager  
 Blue Grosbeak  
 Indigo Bunting  
**Painted Bunting**  
 Dickcissel  
 Lark Sparrow  
 Grasshopper Sparrow  
**Henslow's Sparrow** – uncommon, nests locally  
 Orchard Oriole  
 Baltimore Oriole

Uncommon Breeding Species/Edge of Range, but Common Migrants

**Upland Sandpiper** – primarily in tallgrass prairie  
 Tree Swallow – primarily near reservoirs and wetlands  
 Gray Catbird – primarily in residential neighborhoods and riparian forest



Yellow Warbler – primarily in willow thickets and riparian forest  
Rose-breasted Grosbeak – primarily in riparian forest  
Chipping Sparrow – open woodlands

Sporadic, Very Local or Accidental Breeding Species

Black-bellied Whistling Duck  
Mississippi Kite  
Black-billed Cuckoo  
Common Poorwill  
Acadian Flycatcher  
**Wood Thrush**  
**Swainson's Warbler** (nested historically in bottomland forest)  
**Bachman's Sparrow**

Species Present Primarily During the Winter

**Trumpeter Swan** - rare  
Tundra Swan – rare  
Cackling Goose  
Green-winged Teal  
**Northern Pintail**  
Northern Shoveler  
Gadwall  
American Wigeon  
**Canvasback**  
Ring-necked Duck  
**Lesser Scaup**  
Common Goldeneye  
Bufflehead  
Hooded Merganser – small numbers may nest  
Common Merganser  
Northern Harrier – small numbers nest  
Sharp-shinned Hawk  
Rough-legged Hawk  
Merlin  
**Prairie Falcon**  
Wilson's Snipe  
Bonaparte's Gull  
Ring-billed Gull  
Herring Gull  
Long-eared Owl  
**Short-eared Owl** - small nesting population  
Yellow-bellied Sapsucker  
Red-breasted Nuthatch  
Brown Creeper  
Winter Wren  
Golden-crowned Kinglet  
Ruby-crowned Kinglet – more common as a migrant  
Hermit Thrush  
Cedar Waxwing  
Yellow-rumped Warbler  
Spotted Towhee

Eastern Towhee  
American Tree Sparrow  
Savannah Sparrow  
**LeConte's Sparrow**  
Fox Sparrow  
Song Sparrow  
White-throated Sparrow  
White-crowned Sparrow  
**Harris's Sparrow**  
Dark-eyed Junco  
Lapland Longspur  
**Smith's Longspur**  
**Chestnut-collared Longspur**  
Western Meadowlark  
Brewer's Blackbird  
**Rusty Blackbird**  
Purple Finch  
Pine Siskin

Primarily Migrant Species but with Small Wintering Populations (often weather dependent)

Common Loon – winter in small numbers on reservoirs  
Horned Grebe – winter in small numbers on reservoirs  
American White Pelican – winter in small numbers on reservoirs  
Double-crested Cormorant – winter in moderate numbers on ponds and reservoirs  
Greater White-fronted Goose – winter in small numbers  
Snow Goose – winter locally  
Ross's Goose – winter locally  
Redhead – winter in moderate numbers  
Ruddy Duck – winter in small numbers  
American Pipit – small numbers winter along rivers  
Lincoln's Sparrow – small numbers over-winter  
Swamp Sparrow – small numbers over-winter

Sporadic or Irregular Wintering Species

Western Grebe  
Greater Scaup – winter locally  
Long-tailed Duck  
White-winged Scoter  
Northern Goshawk  
**Golden Eagle**  
**Ferruginous Hawk**  
Thayer's Gull  
Glaucous Gull  
Lesser Black-backed Gull  
Northern Saw-whet Owl  
**Burrowing Owl**  
Rock Wren  
Evening Grosbeak  
Red Crossbill

Primarily Spring and/or Fall Migrant Species:

Eared Grebe

American Bittern

White-faced Ibis

Blue-winged Teal – rare nesting species

Cinnamon Teal - rare

Red-breasted Merganser – winter in small number on reservoirs

Osprey

**Peregrine Falcon**

Virginia Rail – rare nesting species

Sora

**Sandhill Crane**

Black-bellied Plover

**American Golden-Plover**

Semipalmated Plover

**Piping Plover** – rare

American Avocet

Greater Yellowlegs

Lesser Yellowlegs

**Solitary Sandpiper**

Willet

Spotted Sandpiper

**Long-billed Curlew**

**Hudsonian Godwit**

Marbled Godwit – rare

Ruddy Turnstone - rare

Red Knot - rare

Sanderling – rare

Semipalmated Sandpiper

Least Sandpiper – small numbers winter on rivers and reservoirs

**Western Sandpiper** – rare

White-rumped Sandpiper

Baird's Sandpiper

Pectoral Sandpiper

Dunlin

Stilt Sandpiper

**Buff-breasted Sandpiper**

Long-billed Dowitcher

**Wilson's Phalarope**

Red-necked Phalarope - rare

Franklin's Gull

Sabine's Gull – rare

Forster's Tern

Caspian Tern

Common Tern – rare

Black Tern

Whip-poop-will - rare

Rufous Hummingbird – rare

Olive-sided Flycatcher

Alder Flycatcher

**Willow Flycatcher**

Yellow-bellied Flycatcher  
 Least Flycatcher  
 Bank Swallow  
 Blue-headed Vireo  
 Sedge Wren – small numbers may nest in late summer  
 Marsh Wren  
 Veery – rare  
 Gray-cheeked Thrush  
 Swainson's Thrush  
**Sprague's Pipit**  
 Tennessee Warbler  
 Nashville Warbler  
 Orange-crowned Warbler  
 Chestnut-sided Warbler – rare  
 Magnolia Warbler – rare  
**Prairie Warbler** - rare  
 Black-throated Green Warbler  
 Blackburnian Warbler – rare  
 Blackpoll Warbler  
 Palm Warbler – rare  
 American Redstart  
 Ovenbird  
 Northern Waterthrush  
 Mourning Warbler  
 Wilson's Warbler  
 Canada Warbler - rare  
 Scarlet Tanager  
 Clay-colored Sparrow  
 Vesper Sparrow – small percentage over-winter  
 Yellow-headed Blackbird  
 Bobolink

### **Bird-Habitat Relationships within the Tallgrass Prairie BCR**

#### **Bottomland Hardwood Forest Habitat**

Bottomland hardwood forests occur in the Tallgrass Prairie BCR along and in the flood plains of the Caney, Verdigris and Neosho rivers as well as the flood plains of some of the larger streams including Pryor, Big Cabin and Little Cabin creeks. These forests are dominated by pin oak, pecan, shumard oak, bur oak and black walnut trees, and they usually occur in level, low-lying sites along low-gradient portions of the river or stream. Often, these forests will have an abundant understory of shrubs and cane because of their mesic soil characteristics.

#### Species of Greatest Conservation Need:

- American Woodcock
- Prothonotary Warbler
- Louisiana Waterthrush
- Rusty Blackbird (wintering habitat)

#### Other Representative Species of Conservation Interest:

- Yellow-crowned Night Heron
- Yellow-billed Cuckoo
- Yellow-throated Vireo
- Purple Finch

### **Riparian Forest Habitat**

Riparian forests grow adjacent to perennial and intermittent streams - usually occurring within 100 to 150 feet from each bank of the stream channel. In the Tallgrass Prairie BCR, narrow riparian forests are found along most of the larger perennial and intermittent streams, and they are dominated by black willow, green ash, box elder, silver maple, American elm, cottonwood, hackberry and other deciduous trees. Riparian forests are very productive habitats and high-quality riparian forest tracts (e.g. those that are large, relatively wide and not altered by clearing or grazing) may contain has high a density and diversity of birds as any habitat type.

#### Species of Greatest Conservation Need:

- American Woodcock
- Red-headed Woodpecker
- Prothonotary Warbler (secondary nesting habitat)
- Louisiana Waterthrush (primary nesting habitat)
- Kentucky Warbler (secondary nesting habitat)
- Bell's Vireo (secondary nesting habitat)
- Rusty Blackbird (secondary winter habitat)

#### Other Representative Species of Conservation Interest:

- Yellow-crowned Night Heron
- Yellow-billed Cuckoo
- Red-headed Woodpecker
- Purple Finch

### **Upland Oak Forest and Woodland Mosaic**

Oak-dominated deciduous forests and woodlands occur on sandstone ridges in the Osage Plains region of the Tallgrass Prairie BCR and along the boundary between this BCR and the adjacent Oaks and Prairies BCR. These forests and woodlands are also know by the name "Crosstimbers" and they are usually dry forests that are dominated by post oak, blackjack oak, black hickory, bitternut hickory and black oak. They occur in a gradient of canopy conditions from closed canopy forests (especially on slopes) to open canopy woodlands.

#### Species of Greatest Conservation Need:

- Red-headed Woodpecker
- Painted Bunting (primary nesting habitat)
- Harris's Sparrow

#### Other Representative Species of Conservation Interest:

- Yellow-billed Cuckoo
- Great Crested Flycatcher
- Red-eyed Vireo
- Summer Tanager

### **Deciduous Shrubland Habitat**

Deciduous shrublands typically occur in the transition zones between tallgrass prairies and upland oak woodlands and between tallgrass prairies and riparian forests. They also may occur in prairies and rangelands that are not burned frequently and in former crop fields and pastures where intensive management has been abandoned and the vegetation has been allowed to transition into an "old field" structure. These shrublands are frequently small (less than 40 acres) or occur in long, linear transition zones. They are dominated by deciduous shrubs and early-succession trees (e.g. plums, roughleaf dogwood, persimmon, hawthorns, and deciduous holly). ; these are often transitional between woodland

and grassland sites; these include fire-maintained shrublands embedded within prairies and “old field” habitat in the early stages of succession back to forest.

Species of Greatest Conservation Need:

- Bell’s Vireo (primary nesting habitat)
- Northern Bobwhite (primary nesting habitat)
- Painted Bunting (secondary nesting habitat)
- Harris’s Sparrow (primary wintering habitat)

Other Representative Species of Conservation Interest:

- Scissor-tailed Flycatcher
- Bewick’s Wren
- Dickcissel (primary nesting habitat)
- Field Sparrow
- Lark Sparrow
- Orchard Oriole

### **Tallgrass Prairie Habitat**

Historically, tallgrass prairies were the most abundant and widespread habitat type in this region. This habitat occurs or occurred on upland sites with clay or tight soils and is dominated by warm-season bunch grasses and a diversity of herbaceous forbs. This community was shaped and maintained by frequent fires and to a smaller extent by periodic grazing. The habitat usually contains a very small component of shrub cover (< 5%) and a very sparse canopy of trees (<3%). In the present day, tallgrass prairies exist across most of the Flint Hills region of the BCR, but most of the historic tallgrass prairie acreage in the Osage/Cherokee Plains in the eastern portion of the BCR has been converted to fescue pastureland or crop fields. Where prairies remain, they are used for grazing cattle or they are annually cut for hay. In both land-use scenarios, the historic frequencies of fire and grazing have been altered. In the present day, grazing is continuous or on a more frequent rotation than historic conditions. Fire is used very frequently in the Flint Hills and almost absent in the eastern portion of the BCR. Most of the avian Species of Greatest Conservation Need that depend upon tallgrass prairie habitat are area-sensitive to some degree and many require large tracts of grassland (e.g. over 500 acres).

Species of Greatest Conservation Need:

- Greater Prairie Chicken (primary nesting habitat)
- Northern Bobwhite (secondary nesting habitat)
- American Golden Plover (migration stop over habitat)
- Upland Sandpiper (primary nesting habitat) (very local)
- Short-eared Owl
- Loggerhead Shrike
- Sprague’s Pipit (migration stop over habitat)
- LeConte’s Sparrow (primary wintering habitat – usually areas with tall grass)
- Smith’s Longspur (wintering habitat – often in disturbed areas)

Other Representative Species of Conservation Interest:

- Northern Harrier
- Dickcissel (primary nesting habitat)
- Grasshopper Sparrow
- Lark Sparrow
- Eastern Meadowlark

### Central Hardwoods (Ozark) BCR Bird Community (BCR 24)

Approximately 285 species of birds regularly occur in the Central Hardwoods portion of Oklahoma. This includes 44 of the species that are classified as Species of Greatest Conservation Need in Oklahoma. Approximately 122 species have at least a small nesting population within the BCR, and this region is especially important to mesic deciduous forest birds such as the Kentucky Warbler, Cerulean Warbler and Worm-eating Warbler. Important habitat types within this region include: mesic deciduous forest, bottomland hardwood forest, riparian forest, upland oak-pine woodlands, tallgrass prairies and floodplain herbaceous wetlands.

Important bird conservation issues within this region include:

- conversion of native tallgrass prairie tracts on level plateaus with deep soils into non-native pasture grasses (primarily tall fescue) and crop fields
- fragmentation of forest tracts by roads, utility lines, natural gas pipelines, and rural home development (especially second-home and retirement home development)
- conversion of tallgrass prairies, oak woodlands and mesic bottomland forests to agricultural uses such as cropland and fescue pastureland
- alteration of oak-pine woodland structure by fire suppression that has increased canopy closure and decreased the density of herbaceous vegetation in the understory
- alteration of forest structure as a result of past timber harvest; widespread clear-cutting in the past followed by fire suppression has resulted in the present-day condition of dense, even-aged forests with relatively sparse understory vegetation.
- inundation of riparian and bottomland forests by the construction of large reservoirs

Below is a listing of the avian species that regularly occur in the Central Hardwood BCR in Oklahoma. These species are arranged by their season(s) of residence in the state. Those species that are shown in **bold print** are Species of Greatest Conservation Need in Oklahoma.

Species Present Year-round Species (some species are migratory and have larger populations in the winter or breeding season)

Canada Goose  
Wood Duck – winter population is smaller  
Mallard - winter population much larger  
Great Blue Heron  
Turkey Vulture  
Black Vulture  
Cooper's Hawk  
**Bald Eagle**  
Red-tailed Hawk  
Red-shouldered Hawk  
American Kestrel - winter population is larger  
Wild Turkey  
**Northern Bobwhite**  
Killdeer  
Mourning Dove  
Rock Pigeon  
Eurasian Collared Dove  
**Barn Owl**  
Eastern Screech-Owl  
Great Horned Owl  
Barred Owl

Belted Kingfisher  
**Red-headed Woodpecker**  
Red-bellied Woodpecker  
Downy Woodpecker  
Hairy Woodpecker  
Northern Flicker - winter population much larger  
Pileated Woodpecker  
Blue Jay  
American Crow  
Carolina Chickadee  
Tufted Titmouse  
White-breasted Nuthatch  
Carolina Wren  
Bewick's Wren  
Eastern Bluebird  
American Robin  
Northern Mockingbird  
**Loggerhead Shrike**  
European Starling  
Northern Cardinal  
Eastern Towhee  
Field Sparrow  
Chipping Sparrow  
Red-winged Blackbird  
Eastern Meadowlark  
Great-tailed Grackle  
Common Grackle  
Brown-headed Cowbird  
House Finch  
American Goldfinch  
House Sparrow

Species with Localized, Year-round Populations

Greater Roadrunner  
Pine Warbler

Species Present Primarily During the Summer Breeding Season

Great Egret  
**Snowy Egret**  
**Little Blue Heron**  
Cattle Egret  
Green Heron  
Black-crowned Night-Heron  
Yellow-crowned Night Heron  
Least Bittern - rare  
Broad-winged Hawk  
**King Rail** - rare  
Yellow-billed Cuckoo  
Black-billed Cuckoo - rare  
Common Nighthawk  
Chuck-will's-Widow



**Whip-poor-will**

Chimney Swift  
Ruby-throated Hummingbird  
Eastern Wood-Pewee  
Acadian Flycatcher  
Eastern Phoebe – small numbers over-winter  
Great Crested Flycatcher  
Eastern Kingbird  
Scissor-tailed Flycatcher  
Purple Martin  
Northern Rough-winged Swallow  
Cliff Swallow  
Barn Swallow  
Fish Crow  
House Wren  
Blue-gray Gnatcatcher  
Gray Catbird  
Brown Thrasher – small numbers over-winter  
White-eyed Vireo

**Bell's Vireo**

Yellow-throated Vireo  
Warbling Vireo  
Red-eyed Vireo  
Northern Parula  
Yellow-throated Warbler

**Prairie Warbler**

Black-and-white Warbler

**Prothonotary Warbler****Louisiana Waterthrush****Kentucky Warbler**

Common Yellowthroat  
Yellow-breasted Chat  
Summer Tanager  
Scarlet Tanager  
Blue Grosbeak  
Indigo Bunting

**Painted Bunting**

Dickcissel  
Lark Sparrow  
Grasshopper Sparrow  
Orchard Oriole  
Baltimore Oriole

**Uncommon Breeding Species/Edge of Range, but Common Migrants**

**Willow Flycatcher** – primarily in riparian thickets and woodlands  
Tree Swallow – primarily in the vicinity of reservoirs  
**Wood Thrush** – primarily in mesic deciduous forest  
Yellow Warbler – primarily in willow thickets and riparian forest  
American Redstart – primarily in mesic deciduous forest  
Ovenbird – primarily in mesic deciduous forest

Sporadic, Very Local or Accidental Breeding Species

Western Kingbird  
**Blue-winged Warbler**  
**Cerulean Warbler**  
**Worm-eating Warbler**  
**Swainson's Warbler**  
**Hooded Warbler**

Species Present Primarily During the Winter

Common Loon – winter on reservoirs  
Horned Grebe – winter on reservoirs  
Pied-billed Grebe - possibly small numbers nest  
Double-crested Cormorant  
**Trumpeter Swan** - rare  
Tundra Swan – rare  
Snow Goose – winter locally  
Ross's Goose – winter locally  
Green-winged Teal  
Black Duck  
**Northern Pintail**  
Northern Shoveler  
Gadwall  
American Wigeon  
**Canvasback**  
Ring-necked Duck  
**Lesser Scaup**  
Greater Scaup – winter locally  
Common Goldeneye  
Bufflehead  
Hooded Merganser – small numbers may nest  
Common Merganser  
Ruddy Duck  
Northern Harrier – possible rare nesting species  
Sharp-shinned Hawk  
Rough-legged Hawk – northern counties  
Merlin  
American Coot  
Wilson's Snipe  
**American Woodcock** – small numbers may nest  
Bonaparte's Gull  
Ring-billed Gull  
Herring Gull  
Long-eared Owl  
**Short-eared Owl**  
Yellow-bellied Sapsucker  
Horned Lark -possibly small numbers may nest  
Red-breasted Nuthatch  
Brown Creeper  
Winter Wren  
Golden-crowned Kinglet  
Ruby-crowned Kinglet – more common as a migrant

Hermit Thrush  
Cedar Waxwing  
Yellow-rumped Warbler  
American Tree Sparrow  
Savannah Sparrow  
Fox Sparrow  
Song Sparrow  
Swamp Sparrow  
White-throated Sparrow  
White-crowned Sparrow  
**Harris's Sparrow**  
Dark-eyed Junco  
Lapland Longspur  
**Smith's Longspur**  
**Rusty Blackbird**  
Purple Finch  
Pine Siskin

Primarily Migrant Species but with Small Wintering Populations (often weather dependent)

American White Pelican – winter in small numbers on reservoirs  
Greater White-fronted Goose  
Redhead  
Red-breasted Merganser – winter in small number on reservoirs  
American Pipit – small numbers winter along rivers  
Orange-crowned Warbler  
**LeConte's Sparrow**  
Lincoln's Sparrow

Sporadic or Accidental Wintering Species

Yellow-billed Loon  
Pacific Loon  
Red-throated Loon  
Long-tailed Duck  
White-winged Scoter  
Golden Eagle  
Thayer's Gull  
Glaucous Gull  
Lesser Black-backed Gull  
Northern Saw-whet Owl  
Brewer's Blackbird  
Evening Grosbeak  
Red Crossbill

Primarily Spring and/or Fall Migrant Species:

Eared Grebe  
American Bittern  
White-faced Ibis  
Blue-winged Teal – rare nesting species, small numbers over-winter  
Cinnamon Teal - rare  
Osprey  
**Peregrine Falcon**

Virginia Rail – rare nesting species; small numbers over-winter

Sora

**Yellow Rail**

Common Moorhen – rare nesting species

Black-bellied Plover

**American Golden-Plover**

Semipalmated Plover

**Piping Plover** – rare

American Avocet

Greater Yellowlegs – may winter in small numbers

Lesser Yellowlegs

**Solitary Sandpiper**

Willet

Spotted Sandpiper

**Upland Sandpiper** – may nest locally in prairie remnants

Whimbrel - rare

**Hudsonian Godwit**

Marbled Godwit – rare

Ruddy Turnstone - rare

Sanderling – rare

Semipalmated Sandpiper

Least Sandpiper – may winter in small numbers

**Western Sandpiper** – rare

White-rumped Sandpiper

Baird's Sandpiper

Pectoral Sandpiper

Dunlin

Stilt Sandpiper

**Buff-breasted Sandpiper**

Long-billed Dowitcher

**Wilson's Phalarope**

Red-necked Phalarope - rare

Franklin's Gull

Forster's Tern

Caspian Tern

Common Tern

Black Tern

Rufous Hummingbird – rare

Olive-sided Flycatcher

Alder Flycatcher

Yellow-bellied Flycatcher

Least Flycatcher

Philadelphia Vireo

Blue-headed Vireo

Tree Swallow – small numbers nest near reservoirs

Bank Swallow

Sedge Wren

Marsh Wren – small numbers may over-winter

Veery – rare

Gray-checked Thrush

Swainson's Thrush

**Sprague's Pipit**

Tennessee Warbler

Nashville Warbler

Golden-winged Warbler - rare

Chestnut-sided Warbler

Magnolia Warbler

Black-throated Blue Warbler – rare

Black-throated Green Warbler

Blackburnian Warbler

Blackpoll Warbler

Palm Warbler – rare

Bay-breasted Warbler - rare

Northern Waterthrush

Mourning Warbler

Canada Warbler

Wilson's Warbler

Rose-breasted Grosbeak – possible rare breeding species

Clay-colored Sparrow

**Henslow's Sparrow**

Nelson's Sharp-tailed Sparrow

Vesper Sparrow – small percentage over-winter

Yellow-headed Blackbird

Bobolink

**Bird-Habitat Associations within the Central Hardwoods Region (BCR 24)****Bottomland Hardwood Forest Habitat**

This habitat is comprised of oak-dominated forests growing on seasonally saturated soils within the flood plains of low-gradient streams and small rivers. It also includes seasonally-flooded and semi-permanently flooded, forested wetlands within these bottomland systems. These forests are dominated by shumard oak, bur oak, bitternut hickory, shagbark hickory, black walnut, sugarberry and red maple trees. Because of their mesic soils, many bottomland hardwood stands support abundant woody understories of plum, dogwood, blackhaw viburnum, and witch hazel. Bottomland hardwood forests have a limited occurrence in this region because many low-gradient streams and rivers have been inundated by impoundments and the remaining higher-gradient streams are not conducive to supporting seasonally saturated soils. This habitat occurs only as small tracts of bottomland hardwood forest along a few large streams such as Spavinaw Creek.

**Species of Greatest Conservation Need:**

American Woodcock (primary winter habitat)

Prothonotary Warbler (primary nesting habitat)

Louisiana Waterthrush (secondary nesting habitat)

Swainson's Warbler (primary nesting habitat)

Rusty Blackbird (primary winter habitat)

**Other Representative Species of Conservation Interest:**

Yellow-crowned Night Heron

Yellow-billed Cuckoo

Yellow-throated Vireo

Acadian Flycatcher

Yellow-throated Warbler

Purple Finch

### **Riparian Forest Habitat**

These are the deciduous forests that occur along and adjacent to perennial and intermittent streams. Most riparian forest tracts are linear in shape and occur within 200 feet of stream channels. In the Ozark region, riparian forests are dominated by river birch, green ash, sycamore, American elm, black gum and silver maple trees.

#### Species of Greatest Conservation Need:

- American Woodcock (primary winter habitat)
- Prothonotary Warbler (secondary nesting habitat)
- Louisiana Waterthrush (primary nesting habitat)
- Kentucky Warbler (secondary nesting habitat)
- Bell's Vireo (secondary nesting habitat)
- Rusty Blackbird (secondary winter habitat)

#### Other Representative Species of Conservation Interest:

- Yellow-crowned Night Heron
- Yellow-billed Cuckoo
- Chimney Swift
- Carolina Chickadee
- Purple Finch

### **Mesic Oak Forest Habitat**

This forest type is located on the lower slopes of hills, north-facing slopes and terraces adjacent to flood plains. It is a widespread habitat type in the Ozark region because of the rugged terrain and the frequency of mesic soil sites in valleys and hollows. Mesic forests are dominated by a diversity of deciduous tree species including white oak, northern red oak, chinkapin oak, black gum, white ash, mockernut hickory, and shagbark hickory. Most mesic forest tracts also support an abundant understory of woody shrubs such as dogwoods, hawthorns, viburnums, plums and deciduous holly. The presence of mesic forest tracts can often be predicted based upon their slope and aspect.

#### Species of Greatest Conservation Need:

- Wood Thrush
- Kentucky Warbler
- Worm-eating Warbler
- Cerulean Warbler

#### Other Representative Species of Conservation Interest:

- Yellow-billed Cuckoo
- Chimney Swift
- Eastern Wood-Pewee
- Yellow-throated Vireo
- Yellow-throated Warbler
- Summer Tanager

### **Upland Oak Forest and Woodland Mosaic**

Oak-dominated deciduous forests and woodlands occur on upland/dry soils throughout the Ozark region. Both historically and presently, this is the most abundant habitat type within the region. This habitat is a mosaic of forests and woodlands that are dominated by a variety of oak and hickory species including chinkapin oak, post oak, black hickory, bitternut hickory, black oak, white oak and northern red oak. Wooded stands occur in a gradient of canopy conditions from closed-canopy forests (especially on slopes) to open-canopy woodlands.

#### Species of Greatest Conservation Need:

- Red-headed Woodpecker
- Kentucky Warbler
- Worm-eating Warbler

Other Representative Species of Conservation Interest:

- Yellow-billed Cuckoo
- Chuck-wills-widow
- Eastern Wood Pewee
- Carolina Chickadee
- Summer Tanager

**Deciduous Shrubland Transition Habitat**

Shrublands are uncommon in the Ozark region because they quickly develop into forest communities in the absence of fire. Where they occur, they are maintained by periodic fire and they are dominated by deciduous shrubs and early succession trees such as plums, black cherry, winged elm, farkleberry, redbud and sassafras. These shrublands are usually found within very open woodland sites or in the transitional zones between woodlands and prairie sites. They may occur also in locations where crop fields or pasture land has been abandoned and allowed to be colonized by weedy forbs, grasses and shrubs (e.g. "old field" habitat).

Species of Greatest Conservation Need:

- Blue-winged Warbler
- Bell's Vireo
- Northern Bobwhite
- Painted Bunting
- Prairie Warbler

Other Representative Species of Conservation Interest:

- Scissor-tailed Flycatcher
- Bewick's Wren
- Brown Thrasher
- Field Sparrow
- Lark Sparrow
- Orchard Oriole

**Tallgrass Prairie Habitat**

Tallgrass prairies occur on level plateaus where the soil is relatively deep and fine-textured. Historically, there were approximately a half dozen large tallgrass prairies in the Central Hardwood/Ozark region of Oklahoma. These were among the first places that European settlers settled in the region and most of the historic tallgrass prairie acreage has been converted to tall fescue pasture land, crop fields or residential housing. Where tallgrass prairies remain, they are typically small and dominated by warm-season bunch grasses with a diversity of native herbaceous forbs. Historically, this habitat type was maintained by periodic fire, but the remaining prairie tracts usually exist as hay meadows.

Species of Greatest Conservation Need:

- Northern Bobwhite
- American Golden Plover (migration stop over habitat)
- Upland Sandpiper (very local)
- Sprague's Pipit (migration stop over habitat)
- Henslow's Sparrow (very local)
- LeConte's Sparrow (wintering habitat)
- Smith's Longspur

Other Representative Species of Conservation Interest:

- Scissor-tailed Flycatcher
- Dickcissel
- Grasshopper Sparrow
- Lark Sparrow
- Eastern Meadowlark

### **Ouachita Mountains/West Gulf Coastal Plain BCR Bird Community (BCR 25)**

Approximately 300 species of birds regularly occur in the geographically diverse Ouachita Mountain and West Gulf Coastal Plain BCR of Oklahoma. This includes 49 of the species that are classified as Species of Greatest Conservation Need in Oklahoma. Approximately 122 species have at least a small nesting population within the BCR, and this region is especially important to pine woodland birds such as the Red-cockaded Woodpecker, Brown-headed Nuthatch and Bachman's Sparrow, bottomland hardwood forest birds such as the Swainson's Warbler and Prothonotary Warbler, and mesic deciduous forest birds such as the Kentucky Warbler, Cerulean Warbler and Worm-eating Warbler. Important habitat types within this region include: shortleaf pine woodlands, mesic deciduous forest, bottomland hardwood forest, herbaceous marsh, riparian forest, loblolly pine and oak-hickory forest, and forested swamp.

Below is a listing of the avian species that regularly occur in the Ouachita Mountains and West Gulf Coastal Plain BCR in Oklahoma. All species are arranged by their season(s) of residence in the state. Those species that are shown in **bold** print are Species of Greatest Conservation Need in Oklahoma.

Species Present Year-round Species (some species are migratory and have larger populations in the winter or breeding season)

Pied-billed Grebe - larger wintering population

Canada Goose

Wood Duck

Great Blue Heron

Turkey Vulture

Black Vulture

Cooper's Hawk

**Bald Eagle** - wintering population is larger

Red-tailed Hawk

Red-shouldered Hawk

American Kestrel

Wild Turkey

**Northern Bobwhite**

American Coot - winter population is much larger

Killdeer

Mourning Dove

Rock Pigeon

Eurasian Collared Dove

Greater Roadrunner

Eastern Screech-Owl

Great Horned Owl

Barred Owl

Belted Kingfisher

**Red-headed Woodpecker**

Red-bellied Woodpecker

Downy Woodpecker

Hairy Woodpecker

Northern Flicker - wintering population much larger

Pileated Woodpecker

Blue Jay

American Crow

Carolina Chickadee



Tufted Titmouse  
White-breasted Nuthatch  
Brown-headed Nuthatch  
Carolina Wren  
Bewick's Wren - larger wintering population  
Eastern Bluebird  
American Robin  
Northern Mockingbird  
**Loggerhead Shrike**  
European Starling  
Pine Warbler  
Northern Cardinal  
Field Sparrow  
Chipping Sparrow  
Red-winged Blackbird  
Eastern Meadowlark  
Great-tailed Grackle  
Common Grackle  
Brown-headed Cowbird  
House Finch  
House Sparrow

Species with Localized, Year-round Populations

Inca Dove (urban areas)  
**Barn Owl**  
Red-cockaded Woodpecker  
Rufous-crowned Sparrow

Species Present Primarily During the Summer Breeding Season

Great Egret - very small numbers over-winter in southern counties  
**Snowy Egret**  
**Little Blue Heron**  
Cattle Egret  
Green Heron  
Black-crowned Night-Heron  
Yellow-crowned Night Heron  
Least Bittern - rare  
Roseate Spoonbill - rare, non-breeding  
**Wood Stork** - rare, non-breeding  
Broad-winged Hawk  
**King Rail** - uncommon and local  
Common Moorhen - uncommon and local  
Yellow-billed Cuckoo  
Common Nighthawk  
Chuck-will's-Widow  
**Whip-poor-will**  
Chimney Swift  
Ruby-throated Hummingbird  
Eastern Wood-Pewee  
Acadian Flycatcher  
Eastern Phoebe - small numbers over-winter

Great Crested Flycatcher  
Eastern Kingbird  
Scissor-tailed Flycatcher  
Purple Martin  
Northern Rough-winged Swallow  
Cliff Swallow  
Barn Swallow  
Fish Crow  
Blue-gray Gnatcatcher  
Brown Thrasher – small numbers over-winter  
White-eyed Vireo

**Bell's Vireo**

Yellow-throated Vireo  
Warbling Vireo  
Red-eyed Vireo  
Northern Parula  
Yellow-throated Warbler

**Prairie Warbler**

Black-and-white Warbler

**Prothonotary Warbler**

**Worm-eating Warbler**

**Louisiana Waterthrush**

**Kentucky Warbler**

Common Yellowthroat

**Hooded Warbler**

Yellow-breasted Chat

Summer Tanager

Scarlet Tanager

Blue Grosbeak

Indigo Bunting

**Painted Bunting**

Dickcissel

**Bachman's Sparrow** – small numbers may be year-round residents

Lark Sparrow

Grasshopper Sparrow

Orchard Oriole

Baltimore Oriole

Uncommon Breeding Species/Edge of Range, but Common Migrants

**Willow Flycatcher** – primarily in riparian thickets and woodlands

Tree Swallow – primarily in the vicinity of reservoirs

House Wren – primarily in urban/suburban areas

Gray Catbird – primarily in urban/suburban areas

**Wood Thrush** – primarily in mesic deciduous forest

Yellow Warbler – primarily in willow thickets and riparian forest

Black-throated Green Warbler – primarily in mesic high-elevation forest

American Redstart – primarily in mesic high-elevation deciduous forest

Ovenbird – primarily in mesic deciduous forest

Sporadic, Very Local or Accidental Breeding Species

Neotropic Cormorant  
Anhinga  
Tricolored Heron  
White Ibis  
Black-bellied Whistling Duck  
Mottled Duck  
White-tailed Kite  
Crested Caracara - observations, but no documented nesting  
Purple Gallinule  
Black-necked Stilt  
**Least Tern** - nest only along the Red River  
Common Ground Dove  
Western Kingbird  
**Cerulean Warbler**  
**Swainson's Warbler**

Species Present Primarily During the Winter

Common Loon – winter on reservoirs  
Horned Grebe – winter on reservoirs  
Double-crested Cormorant  
**Trumpeter Swan** - rare  
Tundra Swan – rare  
Snow Goose – winter locally  
Ross's Goose – winter locally  
Green-winged Teal  
Black Duck - rare  
Mallard - a few nesting records  
**Northern Pintail**  
Northern Shoveler  
Gadwall  
American Wigeon  
**Canvasback**  
Redhead  
Ring-necked Duck  
**Lesser Scaup**  
Common Goldeneye  
Bufflehead  
Hooded Merganser – small numbers may nest  
Common Merganser  
Ruddy Duck - rare nesting species  
Northern Harrier  
Sharp-shinned Hawk  
Merlin  
Wilson's Snipe  
**American Woodcock** – small numbers may nest  
Bonaparte's Gull  
Ring-billed Gull  
Long-eared Owl  
**Short-eared Owl**  
Yellow-bellied Sapsucker

Horned Lark - a few nesting records  
Red-breasted Nuthatch  
Brown Creeper  
Winter Wren  
Golden-crowned Kinglet  
Ruby-crowned Kinglet  
Hermit Thrush  
Cedar Waxwing  
Yellow-rumped Warbler  
Eastern Towhee  
Spotted Towhee - rare  
**LeConte's Sparrow**  
Savannah Sparrow  
Fox Sparrow  
Song Sparrow  
Swamp Sparrow  
Lincoln's Sparrow  
White-throated Sparrow  
White-crowned Sparrow  
**Harris's Sparrow** - rare  
Dark-eyed Junco  
Lapland Longspur  
**Smith's Longspur** - rare  
**Rusty Blackbird**  
Purple Finch  
Pine Siskin  
American Goldfinch - a few nesting records

Primarily Migrant Species but with Small Wintering Populations (often weather dependent)

American White Pelican – winter on reservoirs  
American Bittern  
Greater White-fronted Goose  
Red-breasted Merganser – winter on reservoirs  
Virginia Rail  
**Yellow Rail** – small numbers over-winter  
Marsh Wren  
American Pipit  
Orange-crowned Warbler – small percentage over-winter  
Vesper Sparrow – small percentage over-winter

Sporadic or Accidental Wintering Species

Greater Scaup  
Long-tailed Duck  
White-winged Scoter  
**Golden Eagle**  
**Prairie Falcon**  
Thayer's Gull  
Herring Gull  
Glaucous Gull  
Northern Saw-whet Owl  
American Tree Sparrow

Brewer's Blackbird  
Red Crossbill

Primarily Spring and/or Fall Migrant Species:

Eared Grebe  
White-faced Ibis  
Blue-winged Teal – rare nesting species, small numbers over-winter  
Cinnamon Teal - rare  
Osprey  
**Peregrine Falcon**  
Sora  
Black-bellied Plover  
**American Golden-Plover**  
Semipalmated Plover  
**Piping Plover** – rare  
American Avocet  
Greater Yellowlegs – over-winter in small numbers  
Lesser Yellowlegs – may over-winter in small numbers  
**Solitary Sandpiper**  
Willet  
Spotted Sandpiper  
**Upland Sandpiper**  
Whimbrel - rare  
**Hudsonian Godwit**  
Marbled Godwit – rare  
Ruddy Turnstone - rare  
Sanderling – rare  
Semipalmated Sandpiper  
Least Sandpiper – over-winter in moderate numbers  
**Western Sandpiper** – rare  
White-rumped Sandpiper  
Baird's Sandpiper  
Pectoral Sandpiper  
Dunlin  
Stilt Sandpiper  
**Buff-breasted Sandpiper**  
Long-billed Dowitcher  
**Wilson's Phalarope**  
Red-necked Phalarope - rare  
Franklin's Gull  
Sabine's Gull – rare  
Forster's Tern – small numbers over-winter  
Caspian Tern  
Common Tern  
Black Tern  
Black-billed Cuckoo – rare  
Rufous Hummingbird – rare  
Olive-sided Flycatcher  
Alder Flycatcher  
Yellow-bellied Flycatcher  
Least Flycatcher

Philadelphia Vireo  
 Blue-headed Vireo  
 Bank Swallow  
 Sedge Wren – small numbers over-winter  
 Veery – rare  
 Gray-cheeked Thrush  
 Swainson's Thrush  
**Sprague's Pipit** - rare  
 Tennessee Warbler  
 Nashville Warbler  
**Blue-winged Warbler**  
 Golden-winged Warbler - rare  
 Chestnut-sided Warbler  
 Magnolia Warbler  
 Black-throated Blue Warbler – rare  
 Black-throated Green Warbler  
 Blackburnian Warbler  
 Blackpoll Warbler  
 Palm Warbler – rare  
 Bay-breasted Warbler - rare  
 Northern Waterthrush  
 Mourning Warbler  
 Canada Warbler  
 Wilson's Warbler  
 Rose-breasted Grosbeak  
 Clay-colored Sparrow  
**Henslow's Sparrow** – small numbers may over-winter  
 Nelson's Sharp-tailed Sparrow  
 Yellow-headed Blackbird  
 Bobolink

## **Bird-Habitat Relationships in the Ouachita Mountains and West Gulf Coastal Plain BCR (BCR 25)**

### **Bottomland Hardwood Forest Habitat**

This habitat is comprised of oak-dominated forests growing on seasonally saturated soils within the flood plains of low-gradient streams and small rivers. It also includes seasonally-flooded and semi-permanently flooded, forested wetlands within these bottomland systems. These forests are dominated by a diversity of tree species including shumard oak, southern red oak, water oak, willow oak, nutmeg hickory, black gum, sweetgum, sugarberry and red maple. Because of their mesic soils, many bottomland hardwood stands support abundant woody understories of Carolina buckthorn, American holly, deciduous holly, dogwoods, hawthorns and cane. In some portions of the West Gulf Coastal Plain, bottomland forests may have saw palmetto, red buckeye, spicebush and waxmyrtle in their understories. Also in the West Gulf Coastal Plain, the bottomland systems include some permanently flooded swamps with bald cypress, water hickory and overcup oak trees. Bottomland hardwood forests were historically common and widespread in the region, especially within the West Gulf Coastal Plain subregion. Bottomland hardwood forests are still found in the flood plains of the Little River, lower Mountain Fork River, Kiamichi River, Poteau River, and many large streams including Fourche Maline, Black Fork, Gaines, and Gates creeks as well as many of the small streams in the Red River valley in Choctaw and McCurtain counties.

Species of Greatest Conservation Need:

- American Woodcock
- Prothonotary Warbler
- Louisiana Waterthrush
- Swainson's Warbler (primary nesting habitat)
- Hooded Warbler
- Rusty Blackbird (winter habitat)

Other Representative Species of Conservation Interest:

- Yellow-crowned Night Heron
- Yellow-billed Cuckoo
- Yellow-throated Vireo
- Acadian Flycatcher
- Yellow-throated Warbler
- Purple Finch

**Riparian Forest Habitat**

Riparian forests occur along intermittent and perennial streams throughout the region, but are most frequent in the valleys and draws of the Ouachita Mountains. Typically, riparian habitats are narrow forests (usually less than 300 feet wide) within larger, upland forest landscapes. Riparian forests are often dominated by a diversity of deciduous trees including river birch, sycamore, and red maple and they often have an abundant understory of shrubs including alder, smooth dogwood, deciduous holly and witch hazel).

Species of Greatest Conservation Need:

- American Woodcock
- Wood Thrush
- Louisiana Waterthrush
- Prothonotary Warbler
- Kentucky Warbler
- Rusty Blackbird

Other Representative Species of Conservation Interest:

- Yellow-billed Cuckoo
- Acadian Flycatcher
- Yellow-throated Warbler

**Mesic Oak Forest Habitat**

Mesic forests are located on the lower slopes, north-facing slopes and east-facing slopes in the Ouachita Mountains, and on terraces and alluvial soils adjacent to flood plains in the Red River and Arkansas River valleys. It is a widespread habitat type in BCR 25, but is much less common than upland oak-pine and oak-hickory forests. Mesic forests are dominated by a diversity of deciduous tree species including white oak, northern red oak, black gum, mockernut hickory, white ash and black cherry. Most mesic forest tracts also support an abundant understory of woody shrubs such as dogwoods, hawthorns, service berry, viburnum, American holly and deciduous holly. A few tree species such as the American beech and cucumber magnolia only occur in Oklahoma within mesic forest stands.

Species of Greatest Conservation Need:

- Wood Thrush
- Cerulean Warbler
- Kentucky Warbler
- Worm-eating Warbler
- Hooded Warbler
- American Woodcock

Other Representative Species of Conservation Interest:

Yellow-billed Cuckoo  
Chimney Swift  
Chuck-wills-widow  
Yellow-throated Vireo  
Carolina Chickadee  
Summer Tanager

#### **Mesic Loblolly Pine & Oak Forest Habitat**

These occur only in the West Gulf Coastal Plain subregion on terraces and alluvial soils near flood plains and bottomland hardwood forest tracts. These forests are dominated by loblolly pine, southern red oak, shumard oak, nutmeg hickory and black gum trees, and they often have a dense shrubby understory. Mature pine plantations on deep-soil sites often have a similar vegetation structure if they are thinned.

##### Species of Greatest Conservation Need:

Brown-headed Nuthatch  
Whip-poor-will  
Worm-eating Warbler  
Kentucky Warbler  
Hooded Warbler

##### Other Representative Species of Conservation Interest:

Chuck-wills-widow  
Yellow-throated Vireo  
Yellow-throated Warbler  
Carolina Chickadee  
Summer Tanager

#### **Shortleaf Pine Woodland Habitat**

Pine woodlands were historically widespread in the Ouachita Mountains on dry south-facing and west-facing slopes. This community is dominated by shortleaf pines with smaller percentages of post oak and other xeric hardwoods. The understory of these woodlands is variable, but is often grassy on drier sites and sites with thin soils, and shrubby on sites with deeper or more-moist soils.

##### Species of Greatest Conservation Need:

Red-cockaded Woodpecker  
Brown-headed Nuthatch  
Prairie Warbler  
Bachman's Sparrow  
Northern Bobwhite

##### Other Representative Species of Conservation Interest:

Chuck-wills-widow  
Summer Tanager

#### **Upland Oak Forest and Woodland Mosaic**

This habitat type is comprised of deciduous forests growing on thin, dry soils in the western portion of the Ouachita Mountains and in the Arkansas River valley. These forest stands are dominated by post oak, blackjack oak, black hickory and black oak and may have structural characteristics of an open-canopy woodland or a closed-canopy forest. This habitat type can be considered an eastern extension of the 'crosstimbers' forests that are common in the Oaks and Prairies BCR.

##### Species of Greatest Conservation Need:

Red-headed Woodpecker  
Kentucky Warbler  
Painted Bunting  
Bachman's Sparrow (in open woodland sites)



Other Representative Species of Conservation Interest:

Yellow-billed Cuckoo  
Chuck-wills-widow  
Carolina Chickadee  
Summer Tanager

**Deciduous Shrubland Transition Habitat**

This habitat type occurs on sites that are dominated by deciduous shrubs and early succession trees (e.g. plum, roughleaf dogwood, hawthorns, persimmon, sassafras, hackberry). It is usually found in broad, open valleys in the Ouachita Mountains and in the Red River valley and it is usually the transition between dry pine-oak woodlands and grassland sites.

Species of Greatest Conservation Need:

Bell's Vireo  
Northern Bobwhite  
Painted Bunting  
Dickcissel

Other Representative Species of Conservation Interest:

Scissor-tailed Flycatcher  
Bewick's Wren  
Field Sparrow  
Lark Sparrow

**Herbaceous Wetland Habitat**

Within this region, herbaceous wetlands occur primarily within the flood plains of low-gradient sections of streams and rivers. These wetlands include cut-off channels, oxbow ponds, off-channel sloughs and flood plain depressions. Herbaceous wetlands are usually seasonally flooded or semi-permanently flooded. The greatest concentrations of herbaceous wetlands occur along the lower Poteau River, the lower Kiamichi River and the Red River valley. Several large natural and human-modified wetlands occur along the tributary streams of the Red River in Choctaw and McCurtain Counties. Red Slough is one of the most noteworthy restored wetland complexes in the Oklahoma portion of this BCR and includes permanently flooded cattail and thailia marshes, seasonally flooded marshes and wet sedge meadows and prairies.

Species of Greatest Conservation Need:

Trumpeter Swan  
Northern Pintail  
Canvasback  
Little Blue Heron  
Snowy Egret  
King Rail  
Yellow Rail (migrant/winter)  
Black Rail (migrant)  
American Golden Plover (migrant)  
Solitary Sandpiper (migrant)  
Upland Sandpiper (migrant)  
Wilson's Phalarope  
Willow Flycatcher

Other Representative Species of Conservation Interest:

American Bittern (migrant)  
Least Bittern  
Purple Gallinule  
Baird's Sandpiper (migrant)

### **Tallgrass Prairie Habitat**

Upland sites dominated by warm-season bunch grasses and a diversity of herbaceous forbs; historically maintained by periodic fire, but now usually maintained by grazing or haying; usually has a very small shrub component and a sparse canopy of trees (<3%); usually must occur in large tracts (over 500 acres) to be usable by species of conservation need).

#### Species of Greatest Conservation Need:

- Northern Bobwhite (secondary nesting habitat)
- American Golden Plover (migration stop over habitat)
- Upland Sandpiper (migration stop over habitat)
- Sprague's Pipit (migration stop over habitat)
- Dickcissel (primary nesting habitat)
- LeConte's Sparrow (primary wintering habitat)
- Chestnut-collared Longspur (primary wintering habitat)
- Smith's Longspur (secondary wintering habitat)

#### Other Representative Species of Conservation Interest:

- Northern Harrier
- Grasshopper Sparrow
- Lark Sparrow
- Eastern Meadowlark

**E. Significant Deviations:**

None

**F. Project Costs:**

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Oklahoma Dept. of Wildlife Conservation

**H. Date:** 12 December 2011

**I. Approved by:**

 12-15-11  
Wildlife Division Administration  
Oklahoma Department of Wildlife Conservation

 12-15-2011  
John D. Stafford, Federal Aid Coordinator  
Oklahoma Department of Wildlife Conservation

**J. Literature Cited:**

## J. Literature Cited:

- American Ornithologists' Union. 1998. Check-list of North American Birds. 7<sup>th</sup> Edition. AOU, Washington, D.C. 829 pp.
- Baumgartner, F. M. and A. M. Baumgartner. 1992. Oklahoma Bird Life. University of Oklahoma Press, Norman, OK. 443 pp.
- Briskie, J. V. 1993. Smith's Longspur. In The Birds of North America, No. 34. American Ornithologists' Union. Philadelphia, PA.
- Brown, B. T. 1993. Bell's Vireo. In The Birds of North America, No. 35, American Ornithologists' Union. Philadelphia, PA.
- Brown, S. C. Hickey, B. Harrington and R. Gill. 2001. United States Shorebird Conservation Plan. Second Edition. Manomet, MA. 60pp.
- Byre, V. J. and N. R. Kuhnert. 1996. Notes on Population Density and Nesting of Bell's Vireo along the Canadian River in Central Oklahoma. Bulletin of the Oklahoma Ornithological Society 29(2): 9-15.
- Dunn, E. H. and R. B. Dunn. 1999. Notes on behavior of Smith's Longspurs wintering in Oklahoma. Bulletin of the Oklahoma Ornithological Society 32(3): 13-20.
- Fitzgerald, J. A. and D. N. Pashley. 2000. Partners in Flight bird conservation plan for the Ozark/Ouachitas, version 1.0. <http://www.partnersinflight.org>.
- Friedmann, H. 1971. Further information on the host relations of the parasitic cowbirds. Auk 88:239-255.
- Grzybowski, J. A. 1995. Black-capped Vireo (*Vireo atricapillus*). In The Birds of North America, No. 181. American Ornithologists' Union, Philadelphia, PA.
- Grzybowski, J.A., J.W. Arterburn, J. A. Cox, V. W. Fazio, B. L. Gall, M. J. Loyd, L. P. Mays and D. L. Reinking. 2009. Date Guide to Occurrences of Birds in Oklahoma. Oklahoma Ornithological Society. 40 pp.
- Hanners, L. A. and S. R. Patton. 1998. Worm-eating Warbler (*Helmitheros vermivorus*). In The Birds of North America, No. 367. American Ornithologists' Union. Philadelphia, PA.
- Kushlan, J. A., M. J. Steinkamp, K. C. Parsons, J. Capp, M. Acosta Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, M. Erwin, C. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J. E. Saliva, B. Syderman, J. Trapp, J. Wheeler and K. Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Washington, DC. 78 pp.
- Lowther, P. E., S. M. Lanyon, and C. W. Thompson. 1999. Painted Bunting (*Passerina ciris*). In The Birds of North America, No. 398. Birds of North America, Inc., Philadelphia, PA.
- McDonald, M. V. 1998. Kentucky Warbler (*Oporornis formosus*). In The Birds of North America, No. 324. Birds of North America, Inc. Philadelphia, PA.

- O'Connell, T. and V. S. Cavalieri. 2008. Status and Habitat for Cerulean Warblers and Other Forest Birds in Eastern Oklahoma. Final Report T-31-P-1 to the Oklahoma Dept. of Wildlife Conservation. 142 pp.
- ODWC. 2005. Oklahoma Comprehensive Wildlife Conservation Strategy. Oklahoma City, OK, 423 pp.
- Pease, C.M. and J. A. Grzybowski. 1995. Assessing the consequences of brood parasitism and nest predation on seasonal fecundity in passerine birds. *Auk* 112: 343-363.
- Reinking, D. L. 2004. Oklahoma Breeding Bird Atlas. Sutton Avian Research Center, University of Oklahoma Press. Norman, OK . 519 pp.
- Reinking, D. L. and D. P. Hendricks. 1993. Occurrence and Nesting of Henslow's Sparrow in Oklahoma. *Bulletin of the Oklahoma Ornithological Society* 26(4): 33-36
- Revels, M. 2009. Swainson's Warbler Status Assessment in Oklahoma. Final Report T-21-P-1 to Okla. Dept. of Wildlife Conservation. 9 pp.
- Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Inigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. Partners In Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY. 84 pp.
- Rosenberg, K. V. 2004. Partners In Flight Continental Priorities and Objectives Defined at the State and Bird Conservation Region Levels: Oklahoma. Cornell Lab of Ornithology. Ithaca, NY. 33 pp.
- Shackford, J. S. 1991. Breeding Ecology of the Mountain Plover in Oklahoma. *Bull. of the Oklahoma Ornithological Society* 24(2): 9-13.
- Shaffer, J.A., C.M. Godade, M.F. Dinkins, D. H. Johnson, L. D. Igl, and B. R. Euliss. 2003. Brown-headed Cowbirds in grasslands: their habitats, hosts and response to management. *The Prairie Nat.* 35(3): 145-186.
- Sutton, G. M. 1967. Oklahoma Birds: Their Ecology and Distribution with Comments on the Avifauna of the Southern Great Plains. Univ. of Oklahoma Press. 674 pp.
- U.S. NABCI Committee. 2000. North American Bird Conservation Initiative: Bird Conservation Region Descriptions. Arlington, VA. 38 pp.
- Wiens, J. A. 1963. Aspects of cowbird parasitism in southern Oklahoma. *Wilson Bull.* 75(2): 130-139
- Withgott, J. H. and K. G. Smith. 1998. Brown-headed Nuthatch (*Sitta pusilla*). In *The Birds of North America*, No. 349, The Birds of North America, Inc. Philadelphia, PA.

## **Appendix A. Species Summaries for Avian Species of Greatest Conservation Need:**

These accounts are based upon a compilation of information from individual species accounts in the Birds of North America series (published by the American Ornithologists Union and the Cornell Lab of Ornithology), and from Baumgartner and Baumgartner 2002, Grzybowski et. al. 2009, Reinking 2004 and Sutton 1967.

**Snowy Egret and Little Blue Heron** – Both of these species nest in mixed-species colonies along with Great Egrets and Cattle Egrets. Nesting colonies occur in scattered locations across the eastern 4/5 of Oklahoma. Period assessment of heron/egret colonies would help monitor the population size and distribution of both the Snowy Egret and the Little Blue Heron, but monitoring is made more complex because the number of nesting birds may vary from year to year based upon regional rainfall patterns. Therefore apparent increases or decreases may be the result of regional population shifts and not local management actions. Both species would benefit from the conservation of shallow, herbaceous wetlands across BCRs 19, 21, 22, 24 and 25.

**Wood Stork** – A small number (usually <200) of birds wander into Oklahoma after the nesting season. Most observations occur between July and September in wetlands in south-central and southeastern Oklahoma. This species should benefit from the conservation of forested wetlands and herbaceous wetlands in the southern parts of BCRs 21 and 25.

**Trumpeter Swan** – Small numbers of Trumpeter Swans (<200) winter on ponds and small lakes across Oklahoma, but primarily in BCRs 19 and 22. Winter birds appear to migrate to Oklahoma from the Wyoming/South Dakota/Nebraska nesting population and from the Minnesota/Wisconsin/Iowa nesting population.

**Northern Pintail** – The Northern Pintail is widespread in Oklahoma during the winter months and is found statewide. Populations tend to be more focused on wetlands in river flood plains statewide and in herbaceous wetlands and ponds in western Oklahoma.

**Canvasback and Lesser Scaup** – Canvasbacks winter across most of Oklahoma, except for the panhandle and northwestern corner, but they typically occur in relatively small numbers throughout the area. The Lesser Scaup is a widespread migrant throughout Oklahoma and winters in relatively small numbers on lakes and large ponds. The wintering populations of both the Canvasback and the Lesser Scaup would benefit from the conservation of herbaceous wetlands around the margins of clear ponds and lakes, especially in the southern half of the state.

**Swallow-tailed Kite** – The Swallow-tailed Kite nested historically in forested bottomlands in the eastern quarter to a third of Oklahoma. There have been no nesting records documented in over a century, but Swallow-tailed Kites are seen periodically in eastern Oklahoma during the late summer and early fall. Nesting Swallow-tailed Kites are associated with forested wetlands and river floodplains. Before Swallow-tailed Kites can be re-established in Oklahoma, bottomland hardwood forests would have to be conserved and restored in the flood plains of the small rivers in eastern Oklahoma. Based upon recent sightings, the most effective areas would be the Poteau, Little, Kiamichi and Boggy rivers in BCRs 21 and 25.

**Bald Eagle** – The Bald Eagle is a widespread winter resident around rivers and lakes statewide. The state also supports a growing nesting population with about 80-85 pairs in 2010. Most of the nesting pairs occur in the eastern 1/3 of the state, especially along the Arkansas, Grand, Illinois and lower Canadian rivers in BCRs 21 and 25. Wintering Bald Eagles are found statewide, with concentrations on most of the large reservoirs. Substantial numbers of wintering Bald Eagles occur in BCRs 19, 21, 22, 24 and 25.

**Swainson's Hawk** – The Swainson's Hawk is widespread in western Oklahoma, but tends to occur at low densities. Swainson's Hawks are most frequently found in landscapes that are level or gently sloping, and that are dominated by prairie or prairie/cropland mosaics. Red-tailed Hawks appear to have a competitive advantage over Swainson's Hawks in landscapes that are partially forested or have greater topographic variation. The greatest number of nesting Swainson's Hawks birds occurs in BCR 18 and the western half of BCR 19. Areas supporting nesting birds become more scattered and isolated in the eastern parts of BCR 19, BCR 21 and the southern part of BCR 22. Swainson's Hawk conservation would be most effective in BCRs 18 and 19 where prairie conservation and restoration can occur on relatively level landscapes.

**Ferruginous Hawk** – During the winter months, the Ferruginous Hawk is widespread, but at very low density, across the western half of Oklahoma in BCRs 18 and 19. Nesting pairs occur in a relatively small area in Cimarron County and western Texas county in BCR 18. In all seasons, Ferruginous Hawks are associated with grassland and grassland/cropland mosaic habitats. The Ferruginous Hawk is a relatively large bird and hunts rabbits and large rodents such as Black-tailed Prairie Dogs. The most effective way to conserve Ferruginous Hawks is to maintain and enhance prairie habitat in the panhandle to increase the resident, breeding population.

**Peregrine Falcon** – The Peregrine Falcon can be found statewide in Oklahoma during the spring and fall migration periods. Peregrine Falcons are often found in close proximity to wetlands where there are concentrations of shorebirds, blackbirds and teal, therefore they would benefit from large-scale wetland conservation and restoration projects anywhere in the state. There is no evidence that the Peregrine Falcon nested in Oklahoma historically, but there are several reports of Peregrine Falcons in urban Tulsa and the potential exists for urban nesting in the future as the falcon's population continues to increase.

**Prairie Falcon** – During the winter months, the Prairie Falcon can be found in low density across the western 2/3 of Oklahoma, but especially in BCRs 18 and 19. Prairie Falcons are typically associated with grassland and shrubland habitats outside of the nesting season. A very small number of nesting pairs (< 6) occur in the Black Mesa region and along the Cimarron River in northern Cimarron County.

**Northern Bobwhite** - Northern Bobwhites are widespread in Oklahoma but have shown dramatic declines in BCRs 19, 21, 22, 24 and 25. The Northern Bobwhite Conservation Initiative has drafted a number of habitat recommendations for grassland, shrubland and woodland habitats, and the ODWC has designated five bobwhite focus areas across the state. These recommendations and focus areas should be supported and implemented.

**Scaled Quail** - Scaled Quail occur in shortgrass prairie, brushy western canyon lands and sand sagebrush shrublands in BCR 18 and the western portion of BCR 19. The conservation of these habitats should be pursued in the panhandle counties and in Beckham, Greer and Harmon counties.

**Lesser Prairie Chicken** - The Lesser Prairie Chicken was found historically in a large percentage of the Mixed-grass Prairie BCR and the eastern half of the Shortgrass Prairie BCR in prairie and shrubland landscapes. Currently, Lesser Prairie Chickens are found in portions of nine counties in northwestern Oklahoma. Most of the remaining populations occur in habitat that are a mosaic of shrublands (sand sagebrush, shinnery oak and sandplum) and mixed-grass prairie. Individual prairie chickens range over relatively large areas that are several square miles in size and have only moderate dispersal tendencies. These factors make the Lesser Prairie Chicken an area-sensitive species that requires large tracts of habitat to maintain local populations.

**Greater Prairie Chicken** – Historically, the Great Prairie Chicken was widespread in the Oklahoma portion of BCR 22 and in adjacent parts of northern BCR 19, BCR 21 and BCR 24. Presently, it remains widespread in the Flint Hills region of BCR 22, and occurs in adjacent portions of BCR 21 in Noble and Pawnee counties. It also has a limited distribution in the Osage Plains of BCR 22 in a few disjunct areas in Nowata, Rogers, western Craig and western Mayes counties. Greater Prairie Chicken populations can be strengthened through the conservation and restoration of relatively large tracts (>10,000 acres) of native, warm-season tallgrass prairie. This must also involve maintaining a mosaic pattern of tallgrass prairie structure in which a portion of the landscape occurs as tall grassy vegetation to provide nesting and roosting cover. It also involved the control of eastern redcedar and other trees that may attain a height of approximately eight feet or more.

**Whooping Crane** – Whooping Cranes migrate through the Oklahoma in a north to south corridor across approximately the western half of the state. During migration, Whooping Cranes use a variety of land uses as migration stop over habitat including braided river channels, wet meadows and prairies, herbaceous wetland and agricultural fields such as alfalfa, wheat and corn stubble. Conservation measures should follow the recommendations described in the Whooping Crane Recovery Plan and should focus on herbaceous wetland complexes and agricultural landscapes near river flood plains and large wetlands in BCR 19 and adjacent BCR 21.

**Sandhill Crane** – The Sandhill Crane is not an immediate conservation concern but was included as a Species of Greatest Conservation Need because most of the Great Plains population is often concentrated in relatively small reaches of river flood plains during migration. Sandhill Cranes migrate across the western half of Oklahoma, including the panhandle, and occupy herbaceous wetlands, mudflats, shallow river channels and agricultural fields. A relatively small percentage of the population over-winters locally in the southern portion of BCR 19.

**King Rail** – King Rails occur in small numbers in widely dispersed wetland complexes in the state. There is year-to-year variation in the number of King Rails in Oklahoma that is associated with annual rainfall and the availability of wet marshes. King Rails are typically found in large marshes with cattails and other tall emergent herbaceous vegetation. Possibly as a result of their larger size, King Rails occupy marshes that are deeper than those used by other rail species. In BCR 19, King Rails have been documented during the nesting season in the wetland complexes of Hackberry Flat WMA, Salt Plains NWR and the Cimarron River terrace in Kingfisher and Major counties. In BCR 21, King Rails have been documented during the nesting season in sloughs and marshes along the Canadian River's flood plain. In BCR 25, King Rails are found regularly in the naturally-occurring and human-restored wetlands within the Arkansas River and the Red River flood plains. Because of their widespread nesting occurrence, King Rails should be a good indicator species for marsh/herbaceous wetland conservation and restoration efforts in Oklahoma.

**Black Rail** – The Black Rail is a rare migrant through Oklahoma and has been documented fewer than 20 times in the state because of its secretive behavior. It appears to associate with seasonally wet sedge-dominated meadows and wetlands. During migration, Black Rails have been recorded in scattered locations in BCRs 19, 21 and 25; therefore they appear to migrate across a large area. Based upon summer records at Salt Plains NWR and along the Arkansas River in southeastern Colorado and Kansas, it appears that Black Rails may nest in small numbers in wetlands along the Cimarron, Beaver and Salt Fork rivers, and surveys of these areas should be undertaken to document their presence or absence. Black Rail conservation should focus on conserving and restoring shallow, seasonal wetlands, especially in the flood plains of rivers and streams, in northwestern, central and southeastern Oklahoma to maintain potential breeding habitat and migratory stop over habitat.



**Yellow Rail** – The Yellow Rail is a migrant through Oklahoma but is rarely observed and documented because of its secretive behavior. Based upon recent and historic records, it appears that the Yellow Rail migrates through approximately the eastern half of Oklahoma, and uses shallow, herbaceous wetlands and wet meadows as stop over habitat. Since 2005, a small wintering population has been documented on Red Slough WMA and the Yellow Rail appears to winter in appropriate habitat in the West Gulf Coastal Plain of Oklahoma. Yellow Rails would benefit from the conservation and restoration of herbaceous wetlands in the eastern third to half of Oklahoma, and especially in the southern portion of BCR 25 where this species migrates and over-winters.

**American Golden Plover and Buff-breasted Sandpiper:** Both of these shorebirds are migratory and pass through Oklahoma during the spring and early fall. They are frequently found away from water in upland settings with short grassy vegetation and moist soil. Both species frequently occur on patches of burned prairie, in hay meadows and man-made sod farms. When they are found in wetlands, they usually occur on mudflats or areas where wetland vegetation has been burned or grazed short. The conservation of these species appears to depend upon maintaining native prairies with a mosaic of burned or hayed patches, and wetlands with areas of bare mud and/or short vegetation.

**Mountain Plover** - Mountain Plovers migrate through western Oklahoma and nest in a limited portion of the Shortgrass Prairie BCR. State Wildlife Grants funding was used to conduct a systematic survey for nesting Mountain Plovers in 2004 and 2005. This survey estimated the breeding population in Oklahoma to be approximately 65 to 90 pairs, most of which nest on level, clay soils in central and eastern Cimarron County and the northwest corner of Texas County. Nesting occurs on fallow winter wheat fields and shortgrass prairie habitat (Shackford 1991). The small nesting population appears stable as the birds appear to have adapted to nesting in agricultural fields. Maintaining a mosaic of non-irrigated crop land, native shortgrass prairies and black-tailed prairie dog colonies should be encouraged to maintain or enhance the local Mountain Plover population.

**Snowy Plover** – Snowy Plovers nest in Oklahoma, but have a limited distribution. Snowy Plovers nest on the three salt flats that occur in northwestern Oklahoma (Woods, Woodward and Alfalfa counties), and on sand bars and scoured bends on the Cimarron, Canadian and Red rivers in the central third of the state (primarily in BCR 19). Snowy Plovers also nest on some man-made or restored wetland projects such as Hackberry Flat WMA and Optima Reservoir, and they may nest on other western reservoirs where bare sand and mud are present during the early and mid summer. Conservation of Snowy Plovers should focus on maintaining the braided channel morphology of the Cimarron, Canadian and Red rivers with shifting sandbars.

**Piping Plover** – The Piping Plover migrates through the main body of the state during the spring and fall. Based upon historic and current records, Piping Plovers appear to use lake shorelines and large river channels as their migration stopover habitats. During its seasonal migrations, Piping Plovers may be found in BCRs 19, 21, 22, 24 and 25, but are rare in all of these. Most of the recent migration observations have come from the birding community which provides data that are biased toward urban areas and areas with easy public access such as large reservoirs.

**Upland Sandpiper** - Upland Sandpipers migrate commonly across the eastern 4/5 of Oklahoma in the spring and fall. However, this is a rare and locally-occurring nesting species. During migration, Upland Sandpipers may be found in prairies, pastures, wetlands and sometimes in crop fields. The small nesting population is found primarily in association with tallgrass and mixed-grass prairies. There are Upland Sandpiper nesting records in the Oklahoma panhandle, and these are usually associated with ungrazed grassland habitats such as Conservation Reserve Program fields. Upland Sandpipers often forage in grazed or recently burned grasslands, but appear to require relatively tall, ungrazed or lightly grazed grasslands for nesting. The Flint Hills in Osage County and nearby portions of Kay, Grant, Washington,

Nowata and Craig counties appear to support the largest number of nesting sandpipers (primarily in BCR 21 and adjacent northeastern BCR 19). Upland Sandpipers migrate through Oklahoma over an extended period of time which makes it difficult for biologists to determine the nesting range in most of the state. In the spring, most of the sandpipers pass through between mid April and mid May, but may continue to move through in early June. Fall migration begins in late July and it is difficult to determine whether any juvenile birds that are seen in late summer or locally raised or migrants.

**Long-billed Curlew** – Oklahoma’s nesting population of the Long-billed Curlew is fairly small and is restricted to the western half of the panhandle. Its range in the state is relatively well-known because State Wildlife Grants funding was used to support survey work for nesting Long-billed Curlews in 2004 and 2005. Long-billed Curlews are usually found on relatively level grasslands landscapes that are comprised of shortgrass prairie, or a mosaic of shortgrass prairie, cropland and conservation reserve program fields.

**Solitary Sandpiper, Hudsonian Godwit, Western Sandpiper and Wilson’s Phalarope** – These four species represent a guild of migratory shorebirds that use mudflats, river channels and shallow herbaceous wetlands as migration stopover habitat each spring and fall. All four species are widespread across Oklahoma during their migrations, but are more commonly observed in central and western Oklahoma (especially in BCRs 18, 19 and 21). Each species has a slightly different feeding behavior with Hudsonian Godwits and Wilson’s Phalaropes feeding in deeper water, and Solitary Sandpipers and Western Sandpiper feeding on mudflats and shallow water. All of these shorebirds benefit from the conservation and restoration of wetland complexes, especially wetlands associated with or in close vicinity to river flood plains where suitable hydrology is more frequent and predictable.

**American Woodcock:** American Woodcocks occur in the eastern 3/5 of Oklahoma but because of their secretive and nocturnal nature, relatively little is known about their population size or their ecology during the summer months (May through September). Nearly all of the documented American Woodcock records in Oklahoma occur during the late fall, winter and early spring period. Woodcocks appear to be secretive winter residents in mesic, bottomland and riparian forest habitats in eastern Oklahoma. Woodcocks display courtship behavior in late February and early March and there are many documented nests and broods of chicks in March and April. However, woodcocks appear to disappear in May and are rarely seen between May and September. It is not known how much of the wintering population nests in Oklahoma or if birds might nest twice in one year – once in Oklahoma in early spring and then again during the summer months farther north. American Woodcocks are found in appropriate forested habitats in BCRs 21, 22, 24 and 25.

**Interior Least Tern** – The Interior Least Tern is a rare breeding species that is restricted to the state’s larger river systems where it nests on sandbars, sparsely vegetated islands and scoured river bends. In Oklahoma, nearly all nesting birds occur along the Cimarron, Canadian, Arkansas and Red rivers or on the large salt flat at Salt Plains NWR. Because this is a federally listed species, its population is monitored periodically. Surveys suggest that there are approximately 1,100 to 1,400 adult Least Terns nesting in Oklahoma each year. Terns typically nest in small colonies; most colonies are less than 15 pairs, although larger colonies in excess of 50 pairs occur in the Arkansas River channel. Most of Oklahoma’s nesting Least Terns occur on the Red River in BCR 25 and the Arkansas River in BCR 21, but a portion of the population nests in BCRs 19 and 22.

**Whip-poor-will** – Whip-poor-will abundance and distribution are not fully known in Oklahoma because of their nocturnal behavior. Breeding Bird Atlas and Breeding Bird Survey data show that this species has a patchy nesting distribution in the Ozark Highlands and in the Ouachita Mountains (BCRs 24 and 25). Current information suggests that Whip-poor-wills are associated with mature forests – both

deciduous and pine-dominated forests. It appears to be somewhat area-sensitive and found in larger, mature forest tracts with a low occurrence of human disturbance or cattle grazing.

**Barn Owl** – The Barn Owl is widely distributed in Oklahoma but it is uncommon and occurs locally throughout this range. Barn Owls are partially migratory with some nesting birds moving southward in the winter and northern birds migrating into the state (presumably the southern part of the state). The abundance and seasonal dynamics of Barn Owl populations is difficult to determine because of their nocturnal and secretive behavior. During the nesting season, Barn Owls are found primarily in the western third of the state and occur in landscapes that are dominated by agricultural and grazing land uses. Scattered, local Barn Owl populations can be found in central and eastern Oklahoma and these too are found primarily in association with agricultural landscapes such as those that occur along the Arkansas and Red rivers. Many Barn Owls nest in man-made structures such as barns, abandoned homes, and grain silos. Because of this modern-day close connection with human-altered landscapes, it is unclear what the status of the Barn Owl was prior to widespread European settlement of Oklahoma. Some Barn Owls in the present day nest in gypsum caves, tree cavities, rocky outcrops and holes in stream banks, and these may have been used more widely in historic times. The most effective locations for the conservation of Barn Owls occur in BCRs 18 and 19 where grassland and agricultural landscapes dominate. The southwestern corner of Oklahoma and the tier of counties along the Oklahoma-Kansas state line between Grant and Cimarron counties appear to be especially important to Barn Owl conservation.

**Short-eared Owl** – During the winter months, the Short-eared Owl is widespread in Oklahoma in mixed-grass and tallgrass prairie habitats where tall, standing vegetation (usually > two feet tall) is present. In the breeding season, both its population size and distribution are smaller and limited to mixed-grass prairie and conservation reserve program fields in the northern tier of counties along the state line with Kansas. The number of nesting birds is probably trivial in comparison to the species' overall population size, but regular nesting appears to occur in parts of BCRs 18 and 22. Winter-season conservation efforts should be focused on conserving mixed-grass and tallgrass prairie landscapes and maintaining tracts with uncut/ungrazed standing grass in the winter months.

**Burrowing Owl** – Burrowing Owls occur in western Oklahoma between late March and early October. A small number of owls spent the winter months in Oklahoma, especially in southwestern Oklahoma, but these birds represent a very small percentage of the population – probably much less than 5%. Burrowing Owls are fairly common and widespread in the Oklahoma panhandle (BCR 18), but have a very small and patchy distribution in the rest of western Oklahoma (BCR 19). Burrowing Owls are strongly associated with Black-tailed Prairie Dog colonies and tend to occur in local areas that support multiple prairie dog colonies. Burrowing Owls use unoccupied prairie dog burrows as nesting sites and forage in grasslands and open shrublands surrounding the prairie dog colonies. Although the species is closely associated with the colonies, there does not seem to be a strong relationship between the size of the colonies and the number of Burrowing Owls in the colony. Because the colony is used as a nesting area and not as the primary foraging area, prairie dog colonies usually support one to four family groups of owls regardless of their size. Burrowing Owls are most effectively conserved in BCR 18, where nesting areas and foraging habitat are relatively common and widespread. Most of the Burrowing Owl nesting population in BCR 19 occurs in the southwestern counties. There are a small number of wintering records in BCRs 21 and 22, but owls do not winter there predictably.

**Red-headed Woodpecker** – The habitats used by Red-headed Woodpeckers are variable and change across the seasons and the regions of the state. In BCRs 18 and 19, the Red-headed Woodpecker is fairly common and occurs in open, riparian woodlands with a canopy dominated by cottonwood trees and a grassy or herbaceous understory. These populations migrate out of the region during the winter months. In BCRs 21, 22, 24 and 25, Red-headed Woodpeckers occur locally during the summer months in mature,

open oak or oak-pine (BCR 25) woodlands or in stands of dead timber that have been killed by fire or flooding caused by beaver activity. Often several pairs will nest in close proximity and the distribution of nesting birds is patchy across the landscape. During the winter months, Red-headed Woodpecker numbers fluctuate substantially and seem to correlate with regional acorn/mast abundance. To maintain local populations, this species of woodpecker appears to require tracts of mature, open woodlands or savannahs. The presence of mature oak and hickory trees is important during the winter season, but not during the nesting season.

**Golden-fronted Woodpecker** – Golden-fronted Woodpeckers are uncommon and have a limited distribution in Oklahoma in the southwestern portion of BCR 19. They appear to be associated with open, riparian woodlands and often forage in mature mesquite woodlands where these are present. The ecology of this species is poorly known but it may favor riparian woodlands that are more open than those occupied by the closely related Red-bellied Woodpecker. There are no historic records for this species in Oklahoma prior to the 1950s, leading to speculation that our population may be the result of a recent northward range extension.

**Lewis's Woodpecker** – The Lewis's Woodpecker is a rare species that is restricted to mature, cottonwood-dominated riparian woodlands along the Cimarron River and mature pine forests in the Black Mesa region of northwestern Cimarron County (a small portion of BCR 18). Oklahoma lies on the eastern edge of the Lewis's Woodpecker's range and our population almost certainly contains fewer than 100 pairs. The conservation of this small population depends upon the conservation and restoration of mature riparian and pine woodlands in this state and maintaining a corridor of suitable habitat to connect the Oklahoma range with birds in the southern Rocky Mountains.

**Red-cockaded Woodpecker** – Historically, the Red-cockaded Woodpecker was found in mature, open pine woodlands in the Ouachita Mountains of southeastern Oklahoma. Because Oklahoma lies on the northwestern edge of the woodpecker's range, this species probably was uncommon even historically. Currently, only one small population of about 15 family groups of Red-cockaded Woodpeckers occurs in Oklahoma – all of these birds are on the McCurtain County Wilderness Area. Recovering this federally endangered species requires the conservation and restoration of large tracts of open shortleaf pine woodlands on ridge tops and south-facing slopes in the Ouachita Mountains.

**Willow Flycatcher** – The Willow Flycatcher is an uncommon spring and fall migrant through most of Oklahoma, although most of the observations for this species have taken place in the eastern 2/3 of the state. There are scattered summer-time and nesting records for the Willow Flycatcher in eastern Oklahoma – primarily in the lower Red River Valley (e.g. Red Slough WMA) and the lower Arkansas River Valley (downstream from Tulsa). During migration, this species is found in a variety of forested habitats, but usually in riparian woodlands. The few Oklahoma nesting records are associated with willow and buttonbush thickets in riparian areas and along the margins of perennial wetlands.

**Loggerhead Shrike** - Loggerhead Shrikes are found statewide in Oklahoma but their conservation status is complicated by the presence of multiple races. Loggerhead Shrikes are found year-round across most of Oklahoma but are absent from the southeastern corner (most of BCR 25). During the winter months, additional shrikes move into the state, particularly in the southern half. Shrikes occur in prairie landscapes with scattered trees and shrubs that prove a savannah-like structure. Because Loggerhead Shrikes occur over a large portion of the state, although usually at low population densities, there are many opportunities to conserve small, local shrike populations. The most abundant nesting populations occur in BC 21 and in the southern portion of BCR 19, therefore these could be considered the highest priority regions for conservation efforts.

**Bell's Vireo** – The Bell's Vireo was historically a widespread and common songbird that occupied fence rows and wind breaks across central Oklahoma, but it underwent one of the steepest population declines of any songbird during the middle and latter decades of the 20<sup>th</sup> century. Bell's Vireos remain widespread in BCRs 19, 21 and 22, and have a patchy distribution in BCRs 18 and 25, but it is uncommon to rare where it occurs. Bell's Vireos are most often found in shrublands within grassland landscapes. Usually, this habitat is dominated by sand plum thickets, but it can also include thickets of plum/skunk brush and shinnery oak in western Oklahoma; "old field" habitats dominated by persimmon, roughleaf dogwood and plum in central Oklahoma, and in riparian willow scrub statewide (Byre and Kuhnert 1996). Bell's Vireos are one of the species that is affected heavily by cowbird parasitism because they nest in suitable cowbird habitat and have an egg incubation period that is several days longer than that of a cowbird. Bell's Vireo conservation would benefit from the maintenance of large shrubland tracts in grazed/rangeland landscapes, and by the maintenance of shrubland habitat in ungrazed landscapes.

**Black-capped Vireo** – The Black-capped Vireo is an endangered species and one of the rarest songbirds that occurs in Oklahoma. Historically, they nested in scattered locations in central and western Oklahoma that supported western crosstimbers habitat – e.g. open or shrubland-like stands of post oak and blackjack oak on dry soils that are either thin and rocky, or deep and sandy. Presently, the only large population of Black-capped Vireos in the state occurs in the Wichita Mountains on Fort Sill and the Wichita Mountains Wildlife Refuge. Smaller populations may occur in the gypsum canyon lands north of Watonga or in rocky outcrops in western Kiowa and southern Caddo counties. Like the Bell's Vireo, the Black-capped Vireo is heavily affected by cowbird parasitism because it nests in a habitat type that is suitable to cowbirds and because the incubation period for its eggs is three to four days shorter than that of a cowbird. Vireo nests that are parasitized by even one cowbird egg almost always fail to produce vireo chicks. Black-capped Vireo conservation should follow the recommendations of the Recovery Plan which include prescribed fire to maintain oak vegetation in a low, shrubby condition and measures to minimize cowbird parasitism of vireo nests.

**Pinyon Jay and Juniper Titmouse** – Both the Pinyon Jay and the Juniper Titmouse are restricted to the pinyon pine and one-seeded juniper woodlands that occur in the rocky terrain around Black Mesa. Both species occur at low density within their habitat and both are secretive during their nesting season so there are a limited number of documented nesting records in Oklahoma. Most of the documented Juniper Titmouse nests come from nest boxes that have been placed in the woodlands near Kenton and Black Mesa State Park. Maintenance of the existing pinyon-juniper woodlands in Cimarron County, and enhancement of the gambel oak and pinyon pine populations should benefit both species. Juniper Titmouse populations could be augmented with nest boxes in areas where mature trees and snags are limited.

**Brown-headed Nuthatch** – Brown-headed Nuthatches are restricted to shortleaf and loblolly pine forests and woodlands. In Oklahoma, this species is uncommon and this may be an artifact of the prevalence of deciduous oaks and hickories within our pine-dominated landscapes. The presence of a substantial percentage of deciduous trees may reduce habitat quality for this pine specialist and lower the density and abundance of nuthatches. The breeding bird survey may underestimate the abundance of this species because it nests early in the spring and nesting is largely over by the time that BBS routes are run. Brown-headed Nuthatch surveys should be conducted in pole-timber and saw-timber pine plantations to assess their use of these man-made habitats. This species should benefit from the restoration of pine-bluestem woodlands on the drier slopes of the Ouachita Mountains.

**Wood Thrush** – The Wood Thrush reaches the western edge of its nesting range in Oklahoma and is relatively rare with a patchy distribution. Most of Oklahoma's Wood Thrushes nest in mature mesic and bottomland forests in BCRs 24 and 25, where they often co-occur with Hooded and Kentucky Warblers. This species appears to be area-sensitive and is usually found in forested tracts within largely forested

landscapes. This species would benefit from the conservation and restoration of mature mesic and bottomland forest in the eastern quarter of the state.

**Sprague's Pipit** – The Sprague's Pipit is a spring and fall migrant across most of Oklahoma and uses disturbed prairies and native grasslands where these exist. Because they are capable of using a wide range of grasslands, including previously plowed, grazed and weedy grasslands, during migration, habitat availability in Oklahoma is unlikely to be a factor that limits their population.

**Blue-winged Warbler** – Oklahoma lies along the southwestern edge of the Blue-winged Warbler's breeding range and this species is rare in our state. The only nesting and summer-time records for Blue-winged Warblers occur in the northern part of BCR 24. Blue-winged Warblers use very early succession habitats and open oak savannah habitats for nesting, which are rare habitat types in the present-day Ozark landscape. Blue-winged Warblers appear to nest in the savannah portions of TNC's Nickel Preserve and suitable habitat could be created through oak savannah restoration on a large scale in Delaware or Ottawa counties. Surveys should be conducted where ever savannah restoration is attempted in the Springfield Plateau.

**Prairie Warbler** – The Prairie Warbler nests in early succession and open woodland habitats in the eastern quarter of Oklahoma in BCRs 24 and 25. Nesting areas include oak savannah/woodlands in the Ozarks such as those that exist on Spavinaw Hills WMA and TNC's Nickel Preserve. It also includes pine woodland and pine-oak woodland areas in the Ouachita Mountains such as exist on Pushmataha WMA and the Ouachita National Forest. Most of the Prairie Warbler population in Oklahoma occurs on recently harvested forests and plantations in the Ouachita Mountains and the West Gulf Coastal Plain, where habitat conditions are suitable for Prairie Warblers for three to seven years after cutting.

**Cerulean Warbler** – The Cerulean Warbler is a rare canopy-dwelling songbird of mature, mesic, deciduous forests and Oklahoma's population is very small and restricted in its range. State Wildlife Grants funding was used to assess the population of Cerulean Warblers and other uncommon forest birds in the period between 2005 and 2007 (O'Connell and Cavalieri 2008). The only confirmed Cerulean Warbler population that was located occurs in the eastern Ouachita Mountains in southern LeFlore County where the birds occupy mesic forests at relatively high elevations and steep slopes. Other populations may exist in the rough terrain of the Boston Mountains in Adair and Sequoyah counties, and in floodplain forests along the Mountain Fork River and some of the larger Ozark streams. The conservation of Cerulean Warblers depends upon the conservation and restoration of mature, deciduous forests on mesic soils in BCRs 24 and 25.

**Prothonotary Warbler** – The Prothonotary Warbler is widespread in central and eastern Oklahoma (eastern BCR 19, and BCRs 21, 22, 24 and 25), but is restricted to bottomland forests along perennial streams and small rivers. This is the only cavity-nesting warbler in Oklahoma and its populations can be enhanced through the provisioning of predator-proof nest boxes in areas where riparian trees are not yet mature or where snags are sparse. Populations of Prothonotary Warblers exist around several of the larger reservoirs in the state and research on the nesting population at Tishomingo National Wildlife Refuge has demonstrated the influence that nest predators (raccoons and black ratsnakes) and early summer flooding can have local populations, even on managed areas. The conservation and restoration of bottomland forest along large reaches of streams will conserve this species. Populations can become locally common with the use of predator guards and nest boxes as supplemental nesting sites.

**Worm-eating Warbler** – Worm-eating Warblers are uncommon throughout their range and typically occur in low densities. They appear to associate with mature oak and oak-pine forests that have a substantial understory of small trees and large shrubs such as sassafras, dogwood, plum and hawthorn. Nesting populations are scattered in BCRs 24 and 25 and these would benefit from the conservation and

restoration of mature, mesic forest and the diversification of forest age structure in existing stands to increase understory density and diversity.

**Swainson's Warbler** - The Swainson's Warbler has a very small and local nesting range in Oklahoma and is restricted to a very specialized, bottomland forest habitat. Field surveys were conducted between 2004 and 2008 in eastern Oklahoma using funding from the State Wildlife Grants program. These surveys located two sizeable Swainson's Warbler populations – one on the lower Little River in McCurtain County and the other on the Poteau River/Wister Reservoir in LeFlore County. Smaller populations were found along the Kiamichi River, the lower Deep Fork River, Greenleaf Creek, Spavinaw Creek and the lower Washita River (Revels 2009). In all cases, the Swainson's Warblers were nesting in bottomland hardwood forest habitat with a dense, shrubby understory and abundant leaf litter. Some birds held nesting territories in second-growth bottomland habitat, but many were in mature forest with a shrub or cane understory. Seasonal flooding is important in maintain bottomland habitats, but flooding that is too severe or prolonged can reduce the habitat's quality or interfere with nesting. Abundant leaf litter appears to be important in habitat selection and the absence of leaf litter may be an indicator to the birds of habitats that experience severe or frequent flooding. The most effective locations for Swainson's Warbler conservation in Oklahoma are bottomland forest in BCR 25, especially the Kiamichi, Poteau and Little rivers.

**Louisiana Waterthrush** – Louisiana Waterthrushes occupy a very narrow range of habitat types – primarily forested riparian zones along perennial and intermittent streams – but are found in portions of BCRs 18, 21, 22, 24 and 25. The Louisiana Waterthrush appears to be more frequent along streams that have mature deciduous trees, and at least a moderate gradient. Often, these streams are clear and have rocky or gravelly substrate. This waterthrush reaches its greatest abundance in the forested valleys and hollows of the Ozark Uplift in BCR 24, although it can be locally common in portions of the Ouachita Mountains, Arbuckle Uplift and Wichita Mountains. Louisiana Waterthrush populations can be effectively conserved by maintaining existing mature riparian forest cover along streams and restoring riparian forests to extend or connect existing forest patches.

**Kentucky Warbler** – The Kentucky Warbler has a patchy distribution in portions of BCRs 21, 24 and 25 in forested habitats that are dominated by mature trees and have an abundance of woody understory vegetation. Kentucky Warblers are most abundant in the Ozark Highlands in BCR 24 where they occur in mesic hardwood forests that grow in hollows and along the lower slopes of plateaus. In BCR 25, they nest in mesic deciduous and oak-pine forests along mountain slopes, in thinned, mature pine plantations with understory shrubs, and in mature loblolly pine-oak forests in the coastal plain. In BCR 21, they nest within mature oak forests in the mesic sites such as ravines the headwaters of streams.

**Hooded Warbler** – Hooded Warblers nest in shrubby understory vegetation within mesic forest types. Nearly all of the nesting population in Oklahoma occurs in the eastern portion of BCR 25 where Hooded Warblers are typically found in low-elevation forests with dense shrub-dominated understories. This is a locally common bird in the bottomland forests along the Little River and other streams in the West Gulf Coastal Plain. Elsewhere in BCR 25 and in the southern portion of BCR 24, it occurs in mesic forests on north-facing mountain slopes, in forested stream valleys and in mature, thinned pine plantations on deeper soils. Hooded Warbler conservation should focus on maintaining and restoring mature deciduous forest or mixed oak-pine forest cover on mesic soils in low-elevation sites in BCR 25.

**Painted Bunting** – The Painted Bunting is a widespread and locally common songbird across the much of Oklahoma with a trend toward greater population density in the southern part of the state. Relatively widespread populations occur in oak and juniper woodlands in BCRs 19, 21 and 22. In BCR 18, this is primarily a bird of riparian forests, while in BCRs 24 and 25 it is a bird of oak-dominated woodlands and

rangeland. There are many conservation opportunity areas for the Painted Bunting, but its conservation requires the maintenance and restoration of open oak woodlands and oak shrublands.

**Bachman's Sparrow** – The historic range of the Bachman's Sparrow (aka Pine Woods Sparrow) in Oklahoma is poorly known, but its preferred habitat of open pine woodlands was once more widespread. In recent decades, nesting populations of Bachman's Sparrow have been found in scattered locations in BCRs 21 and 25. Bachman's Sparrow appears to associate primarily with open, mature shortleaf pine forests with a grassy/herbaceous understory. However, nesting pairs have been found in open, mature oak woodlands with a similar grassy understory. The presence of scattered, mature trees and an understory of moderate to dense tall grass seem to be important in determining habitat suitability for Bachman's Sparrows. The pine/oak -bluestem restoration area on Pushmataha Wildlife Management Area probably supports the largest population in Oklahoma, but other populations exist in the Ouachita Mountains and eastern crosstimbbers.

**Cassin's Sparrow** – The Cassin's Sparrow occurs in its greatest abundance in sand sagebrush shrublands in western Oklahoma, but it also occurs in shortgrass prairie and sparse mixed-grass prairie sites that contain some degree of low shrub or yucca cover. Most of the population in Oklahoma occurs in BCR 18 and this species can be locally common. It also nests across much of BCR 19 and the southwestern edge of BCR 21, but its occurrence in these BCR is variable from year to year and often reflects regional rainfall patterns. When drought is severe in the southern plains, Cassin's Sparrows populations can shift eastward into BCRs 19 and 21 in large numbers. When the region experiences above average rainfall, these populations typically shift back westward. The conservation of Cassin's Sparrows benefits from the conservation and restoration of sand sagebrush shrublands and the retention of yucca and low brush on shortgrass and mixed-grass rangelands.

**Baird's Sparrow** – Baird's Sparrows migrate through the western third of Oklahoma (BCR 18 and western BCR 19), but they are rarely encountered and documented. The limited information that is available suggests that they use mixed-grass prairies, wet meadows and CRP fields during migration. No conclusive conservation recommendations are made at this time, but migration stop over habitat in Oklahoma is probably not a limiting factor to their overall population.

**LeConte's Sparrow** – The LeConte's Sparrow is a secretive grassland sparrow that winters in prairie sites that contain tall, standing vegetation such as occurs in ungrazed or lightly-grazed rangeland, wet meadows, dry marshes, shrublands and CRP fields. LeConte's Sparrows are solitary and difficult to detect unless person walks through their habitat and flushes individual birds from the ground. They winter in the southern part of BCR 19, and much of BCRs 21, 22 and 25 where suitable habitat exists. Conservation of LeConte's Sparrows depends upon the maintenance and restoration of tallgrass prairie landscapes and grazing or fire management that retains rotating blocks of tall standing vegetation during the fall and winter months.

**Henslow's Sparrow** – Henslow's Sparrows are dependent upon tallgrass prairie habitat and nest primarily in prairie tracts that have tall, standing dead vegetation in the early spring. This species appears to be area-sensitive and occurs in landscapes that are dominated by grasslands. Oklahoma's occurs on the southwestern edge of the Henslow's Sparrow's nesting range and all of the confirmed nesting records in this state have occurred since 1960 (Reinking and Hendricks 1993). All or nearly all of the nesting population in Oklahoma occurs in the Tallgrass Prairie BCR, but suitable nesting habitat may occur locally in the Central Hardwoods BCR. Birds have been observed in the Red River Valley (BCR 25) during migration and early winter.

**Nelson's Sharp-tailed Sparrow** – The Nelson's Sharp-tailed Sparrow is secretive migrant that has been documented at fewer than twenty locations in Oklahoma. Based upon this handful of records and



information from its breeding range, the Nelson's Sharp-tailed Sparrow usually is found in association with tall vegetation in wet meadows and herbaceous wetlands. Its migration corridor appears to cross through the eastern half of Oklahoma.

**Harris's Sparrow** – The Harris's Sparrow is widespread in the central 3/5 of Oklahoma during the winter months. It occupies a range of habitats including open oak woodlands and savannahs, shrub thickets within mixed-grass and tallgrass prairie landscapes, and the transition zones between woodlands (both riparian and oak-dominated) and prairies. The Harris's Sparrow is a common wintering sparrow in Oklahoma, but is considered to be a Species of Greatest Conservation Need because of its limited geographic range during both the breeding and wintering seasons. Because it is widespread in Oklahoma, there are many areas within BCRs 19, 21 and 22 where habitat conservation can be undertaken for the benefit of Harris's Sparrows.

**McCown's Longspur** – McCown's Longspurs are found in the western 1/3 of Oklahoma during the winter months. This species often occurs in single-species flocks but may sometimes form mixed-species flocks with Horned Larks and other longspurs. McCown's Longspurs are often associated with short or sparse native prairie, and open sand sagebrush shrubland, but they also may forage in winter wheat and fallow crop fields. The wintering ecology of this species is not fully understood, but Oklahoma, Texas and New Mexico support the majority of the population during the winter months and it appears that the conservation of shortgrass prairie habitat is important for wintering birds.

**Chestnut-collared Longspur** – The Chestnut-collared Longspur occurs across the western half of Oklahoma during the winter months (late October through early April). It is found primarily in mixed-grass prairie and the transition prairies between the mixed-grass and tallgrass prairie communities and between the mixed-grass and shortgrass prairie communities. While Chestnut-collared Longspurs may be found in a diversity of native, warm-season grass communities, they rarely occupy pastureland or crop fields, or prairies that contain a substantial amount of shrub or tree cover. Most of the state's wintering Chestnut-collared Longspurs are found in BCR 19 where the species is widespread in suitable habitat. It is less common in BCR 18, the Flint Hills portion of BCR 21 and the western portion of BCR 22.

**Smith's Longspur** - Smith's Longspurs winter in Oklahoma and are found here between mid-October and mid-April. They have a relatively small breeding range in the Arctic tundra of western Canada and northern Alaska and a similarly small wintering range in the south-central U.S. Their wintering habitat in Oklahoma is comprised of disturbed grasslands within tallgrass and mixed-grass prairie landscapes. They are especially associated with disturbance-associated native grasses such as three-awn wire grass that may grow in heavily grazed sites and buffalo wallows (Dunn and Dunn 1999). Most of the habitat in Oklahoma that supports Smith's Longspurs is found in BCRs 21 and 22, and the eastern portion of BCR 19.

**Rusty Blackbird** - The Rusty Blackbird spends the winter months in small flocks in bottomland hardwood forest habitats in the eastern portion of the state (BCRs 21, 22, 24 and 25). From a habitat perspective, it is a winter-season counterpart to the Prothonotary Warbler and occurs in many of the same locations. The conservation of Rusty Blackbirds requires the conservation and restoration of bottomland forests along substantial reaches of small rivers and large perennial streams in eastern Oklahoma. Some of the best habitat appears to occur in broad, forested floodplains that contain pockets of seasonally flooded wetlands.

**Bullock's Oriole** – Bullock's Orioles occur in open cottonwood, elm and hackberry savannahs in the flood plains of streams in the panhandle and western edge of the state (BCR 18 and the western most portion of BCR 19). Bullock's Orioles often nest near water, but also may nest in mature elms and cottonwoods around ranch houses and groves of trees in the sand dunes along the Beaver, Cimarron and

Canadian rivers. The role that competition plays in shaping the distributions of Baltimore and Bullock's orioles is speculative, but Bullock's Orioles tend to associate with more open riparian savannahs, while the Baltimore Oriole tends to associate with riparian sites that have a closer spacing of mature trees. Bullock's Oriole should benefit from practices that control invasive salt cedar in flood plains and favor more widely spaced native trees.

