

Wildlife Management Notes



No. 8

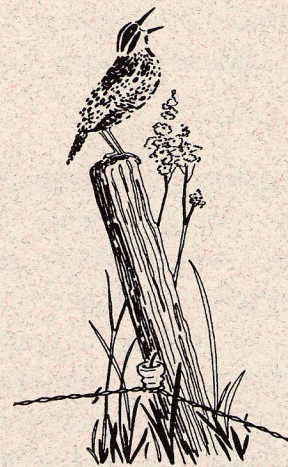
SONGBIRDS

Oklahoma has 355 regularly occurring species of birds. There are 181 nesting species of which 83 are permanent residents. The remainder of the species are either neotropical migrants or temperate migrants. Temperate migrants breed and winter within North America, while neotropical migrants breed in North America and winter in Central and South America. During the spring, these birds move into Oklahoma and feed on abundant insects and other resources available in the growing season. They raise their young before migrating south for the dormant winter season.

The rich variety of bird life in Oklahoma is a result of its central location, where a number of ecoregions in the 48 contiguous states converge. Oklahoma contains 12 ecoregions varying from the Gulf West Coastal Plain, in the southeast, to the Black Mesa, Rocky Mountain foothills in the panhandle. Along with its unique geographic location, the climate and topography of the state greatly vary, from flat to rolling hills to distinct mountainous areas, and even red-rock canyons in the northwestern panhandle. Average annual temperature and rainfall amounts vary from 54 degrees F, with an average of 18 inches of rainfall in the northwestern panhandle region, to 65 degrees F and 45 inches of rain in the loblolly pine forests of southeastern Oklahoma. The variety of conditions creates numerous habitats and a diversity of bird life.

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HABITAT REQUIREMENTS

Each species has unique habitat requirements. Some are found in open prairie habitats and other species are associated with forests. Still others are associated with rock outcrops or with water or wetland habitats. Some species of songbirds require shrubs or grasses in clearings, while others need tree cavities for nesting. Insects caught on the wing are important to swallows and flycatchers; cardinals and mockingbirds search for fruit and seeds as well as insects in summer. There is no single plan for managing all songbirds at once or in any one season. In general, the



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greater the diversity of habitats, the more diverse the songbird population.

Habitat structure, more than any other feature, determines if a given songbird species will use an area. Habitat structure provides visual cues which tell the bird if the habitat is suitable for foraging, breeding, and nesting. Habitat structure generally depends on plant community composition, arrangement, and stage of succession. Structure is reflective of land use as well as climate, soils, and topography. Appropriate structure for some species is not always based on the plant community, but rather physical features such as cliffs, river banks, or even bridges and overpasses.

Some species, such as the yellow-breasted chat, are associated with brushy early successional stages, such as harvested and site prepared areas with a regrowth of pine and hardwood saplings. On the other hand, the red-cockaded woodpecker requires old, mature stands of pine. Blue jays do well in all stages of crown cover in both pine and hardwood types. Several species of songbirds prefer transition zones where two or more habitat or cover types meet. Some species are adapted to grasslands only. Although we use a number of species in Table 1 to illustrate bird associations of the variety of habitats found in Oklahoma, our focus is on forest or open woodland species.

FOOD

Depending on the season and their specific niche, birds will eat fruit, seeds, insects, and other small animals from a variety of locations: soil, under leaves, trees (along branches, trunks, foliage, etc.) or the air. Insects provide a food source high in protein, and most birds are insectivorous during all or part of their lives. The birds, in turn, may provide some biological control on many destructive forest insects.

Digestion is very rapid for birds, especially young birds, since they require an inordinate amount of food in proportion to their body weight. Thus, most of their time is spent feeding themselves and their young. Searching for food can use a great deal of the bird's energy. To reduce the loss of energy due to food gathering, they must have an abundant local food supply.

Table 2 provides a list of important food producing plants for songbirds in Oklahoma.

WATER

Water also is important, both in winter and in summer. It is used for drinking and for bathing. Availability of open water is not always a limiting factor in a songbird habitat; however, stock ponds, impoundments, marshes, and beaver ponds provide diverse habitats and attract a variety of birds. For most sites, a shallow pond or pond margin with a relatively hard bottom is preferred. Birds need to feel safe from predators before they will use a water source, so avoid planting dense surrounding ground cover. Overhanging vegetation or shrubs may be desirable for escape cover.

COVER

Nesting requirements are part of habitat requirements; therefore, they vary among bird species. A variety of habitat types and a balance of different successional stages distributed throughout a landscape provides for the greatest number of species.

Table 1. Selected breeding songbird species common to major biotic associations of Oklahoma. These species are found only if the appropriate habitat structure is available within these associations. See Figure 1 for a map of these associations in Oklahoma.

Species	Oak Hickory Forest	Oak Pine Forest	Loblolly Pine Forest	Post Oak Blackjack Oak Forest	Tall Grass Prairie	Mixed Grass Plains	Short Grass High Plains	Shimmery Oak Grasslands	Mesquite Grassland Plains	Pinyon Pine Juniper Mesa
Yellow-billed Cuckoo	X	X	X	X						
Chuck-will's Widow	X	X	X	X						
Red-bellied Woodpecker	X	X	X	X						
Northern Flicker	X	X	X	X						X
Downy Woodpecker	X	X	X	X						
Ladder-backed Woodpecker						X	X	X	X	X
Pileated Woodpecker	X	X	X							
Scissor-tailed Flycatcher				X	X	X	X	X	X	
Great Crested Flycatcher	X	X	X	X						
Eastern Wood-pewee	X	X	X							
Eastern Phoebe	X	X	X	X						
Acadian Flycatcher	X	X								
Blue Jay	X	X	X	X						
Tufted Titmouse	X	X	X	X		X			X	
Carolina Chickadee	X	X		X						
White-breasted Nuthatch	X	X	X	X						
Carolina Wren						X		X	X	X
Bewick's Wren				X						
Canyon Wren						X		X	X	X
Blue-gray Gnatcatcher	X	X	X	X						
Eastern Bluebird	X	X	X	X				X		X
Wood Thrush	X	X	X							
Red-eyed Vireo	X	X	X	X						
Yellow-throated Vireo	X	X								
Prothonotary Warbler		X	X							
Northern Parula	X	X								
Black-and-white Warbler	X	X		X						
Prairie Warbler	X	X	X	X						
Pine Warbler	X	X	X							
Louisiana Waterthrush	X	X	X							
Common Yellowthroat	X	X	X	X						
Yellow-breasted Chat	X	X	X	X						
American Redstart	X	X	X							
Northern Cardinal	X	X	X	X						
Indigo Bunting	X	X	X	X						
Lazuli Bunting				X		X		X		X
Painted Bunting				X						
Grasshopper Sparrow					X	X	X			
Rufous-crowned Sparrow				X						X
Field Sparrow	X	X	X	X						
Dark-eyed Junco	X	X			X					
Eastern Meadowlark					X	X				
Western Meadowlark					X	X	X	X	X	X
Northern Oriole	X	X	X	X		X	X	X	X	X
Scarlet Tanager	X	X								
Summer Tanager	X	X	X	X						
American Gold Finch		X		X						

Figure 1.

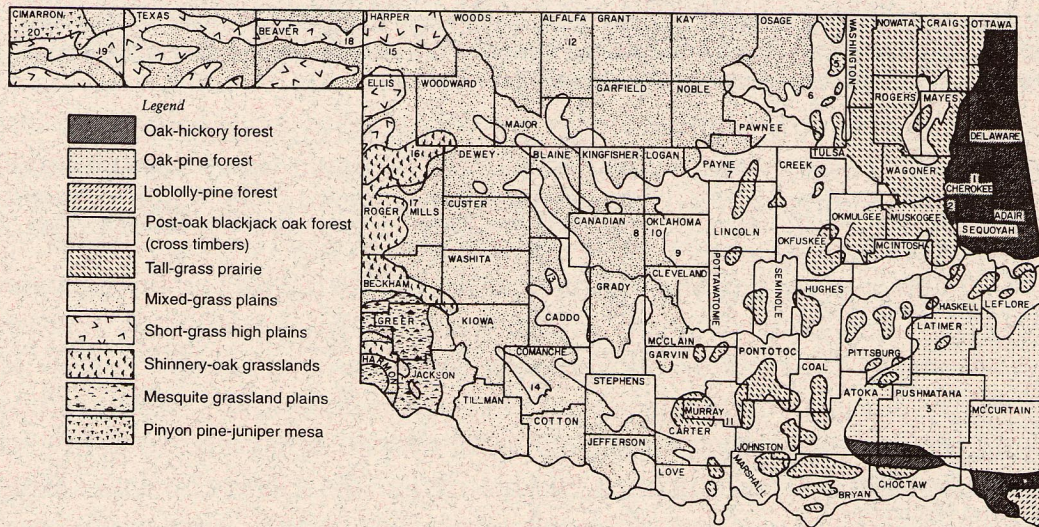


Table 2. Important woody plants providing cover, nest sites, and/or food throughout the year.

Name	Region	Season
Trees		
Pine (Shortleaf, Loblolly)	SE	F-W
Red Cedar	St.	F-W-Sp
American Holly	SE	W
Ash	SE	F-W
Black Cherry	E	S
Black Gum	E	S-F
Box Elder	St.	F-W
Chittamwood	St.	F
Elm	St.	Sp
Hackberry	St.	F-W
Maple	St.	Sp
Mulberry	St.	S
Oak (Blackjack, Post, Red, White)	St.	F-W
Pecan	C-SW	F-W
Plum	St.	S
Sassafras	E	S
Serviceberry	E	Sp-S
Shrubs		
American beautyberry	E	S-F
Blackberry/DewBerry	St.	S
Blueberry/Huckleberry	E	S-F-W
Dogwood	St.	S-F
Elderberry	St.	S
Hawthorn Catagus spp.	St.	F-W
New Jersey Tea	E	Sp-S-F-W
Rusty Black Haw	E	S
Sumac	St.	F-W
Vines		
Clematis	St.	S
Greenbriar	St.	S
Morning Glory	St.	S-F
Peppervine	SE	S-F
Poison Ivy	St.	S-F
Trumpet Vine	St.	S
Virginia Creeper	St.	S-F
Wild Grape	St.	S-F

Regions: St.=Statewide, E=East, C=Central, SE=Southeast, SW= Southwest

Seasons: Sp=Spring, S=Summer, F=Fall, W=Winter

Shrub-like vegetation or vines serve as a nesting habitat and an escape cover for many songbirds. Around three-fourths of bird species nest less than 15 feet from the ground. The average is eight feet.

While thrashers, mockingbirds, catbirds, and many others hide deep in shrub and hedgerows and cardinals tuck their nests in thorny roses, other species prefer larger tree species. Orioles use pendent branches of trees like those found on elms. Robins, jays, kingbirds, and scissor-tailed flycatchers use the branches of sturdier tree species. Some species nest in tree cavities. Cavity nesters include woodpeckers, nuthatches, tree swallows, screech-owls, chickadees, wrens, and others. Standing dead trees, or snags, are very important as nesting cavities, cover, perches for hunting or singing, and as a food source. Not all species depend on trees or other plants for cover or nesting. Kingfishers and bank swallows nest in holes in steep banks, while chuck-wills-widows and whip-poor-wills nest on bare ground.

Bird boxes may provide artificial nest cavities for several songbird species where natural cavities are limited. Martins, bluebirds, chickadees, titmice, and wrens benefit from strategically placed and well-maintained boxes. Fences soon become planted with favorite wild fruits such as sumac, wild rose, black cherry, mulberry, and hawthorn. For specifics of bird boxes see Oklahoma Cooperative Extension Wildlife Management Notes No. 4, "Snags, Cavity Trees, and Downed Logs."

HOME RANGE

Like other wildlife species, songbirds need a certain amount of usable space to move, locate a mate, search for food and water, escape or avoid predators, and rest. The amount of space required depends on the species and the habitat quality. Birds aggressively establish, maintain, and protect their territories for exclusive rights to particular areas, food supplies, or mates. Another influence on home range is the size of the bird itself. For instance, the purple finch has a normal range of five to 15 acres, woodpeckers need 10 to 200 acres, and crows may require 10 square miles. Warblers, vireos, and flycatchers make up a majority of the breeding population in forest communities. However, many of these species migrate to Central and South America in winter. Other species such as cardinals, chickadees, titmice, goldfinches, and woodpeckers remain in Oklahoma all year.

CARRYING CAPACITY

Home range and the territorial nature of songbirds essentially determines the carrying capacity of a given site for songbirds. Carrying capacity for a given species may be improved by increasing the quantity and quality of habitat components. Areas managed specifically for songbirds can attain a breeding population of around six pairs per acre. Silviculture practices for other wildlife species may often meet the objectives for songbirds in the general forest area. A reasonable population objective for regeneration stands in Oklahoma is 12 to 25 species and two to five breeding pairs per acre. In a pole timber stand, the number of species is only five to 10 with one to two breeding pairs per acre. Mature contiguous timber stands in Oklahoma have 10 to 18 species with two to five breeding pairs per acre.

STANDARD MANAGEMENT PRACTICES

In forested habitats, most bird communities can adapt to the habitat change of moderate timber harvest. Some harvesting is essential to retain a component of songbirds such as the yellow-breasted chat, common yellowthroat, prairie warbler, and others, adapted to early successional stages. However, some species such as wood thrush, scarlet tanager, pileated woodpecker, red-eyed vireos, and some species of warblers, require large tracts of mature, unbroken forests. These species are obligate inhabitants of forest interiors for breeding and may not reproduce successfully near the boundary, or edge, of a mature forest stand and an adjacent harvest site or other early successional plant community. The low reproductive success is due to the high incidence of nest predation and parasitism. Common detrimental edge dwellers are nest predators such as crows, grackles, blue jays, and raccoons as well as a brood parasite, the brown-headed cowbird. Interior species only raise one brood per year compared to the two or more broods raised by edge or early successional species. An overall habitat management plan should consider these species as well. For more information on edge management; see Oklahoma Cooperative Extension Wildlife Management Notes No. 9, 'Managing Edges for Wildlife.'

The general key to providing a maximum number of habitat niches for songbirds is to use a mixture of small and large stands in various stages of succession which provide vertical diversity within a landscape unit of several stands. The smallest stands range in size from 5 to 20 acres. To manage for area sensitive species such as the acadian flycatcher, 40-100+ acres are required. Some authorities recommend 2000+ acres for area sensitive species such as the ovenbird. Extend forest rotations to 80-100 years, where economically feasible, to provide stands for these late successional species. Always keep living nest cavity trees and 5 to 10 snags of varying diameter per acre. Special features of the site should be retained for their added diversity, such as a wetland, a rocky cliff, dense evergreen cover, or any other unique feature. Avoid any harvest or other drastic habitat alterations April through June, since this is peak breeding time.

Realize whatever practice you chose will benefit some species to the detriment of others. Even leaving a forest unharvested in an old-growth late successional stage is harmful to some species. ***It is not possible to manage all species needs on every acre of land.***

Forest Regeneration

Stand regeneration using even-aged management practices encourages diversity in tree and shrub species since both shade tolerant and intolerant species are free to grow. This also increases insects, fruit, grass, sedge and forb seed supplies. Different bird species are tied to different stages of succession (Figure 2). Bird species in young, regenerating forests are different from those in pole timber stands. Most species in pole stands also are found in mature stands. In a clearcut area manage for species which require open brushy habitats or grasslands. Retain brush piles or windrows of logging slash for escape cover, roosting, and nesting. Brush piles also harbor insects on which songbirds feed. Scattered logging slash provides the necessary structure on which species like the

Carolina Wren depend. When planting, use wide rows to encourage herbaceous understory development. Generally, site conversion to pure stands of a single tree species is discouraged. However, historically, oak-savanna and pine-grassland woodlands were common on the landscape of eastern Oklahoma. If single tree species such as pines are planted, choose wider spacing and retain hardwoods both in key areas and throughout the stand.

Seed tree and shelterwood methods of regeneration are beneficial since some overstory is retained for an indefinite time period. Immediate displacement of canopy dwelling species is lessened to some extent while providing some habitat needs of early successional songbirds. Clearcutting is beneficial to species requiring early successional stages, although it will displace forest interior species. Selective cutting can be used as a regeneration technique when songbirds which use later stages of succession are favored. Group selection as a silvicultural practice has not been tested adequately for its effects on songbirds; therefore, we cannot make recommendations about using this practice. Remember, no forest regeneration practice is inherently damaging to all songbird species, including clearcutting.

Intermediate Treatments

Use thinning to provide the stand with vertical as well as horizontal diversity. Initial thinning can adjust the overstory composition. Additional thinnings can then be used to promote preferred understory vegetation for both food and cover. Midstory thinnings are particularly beneficial to aerial flycatchers. Always leave cavity trees and snags. Broad scale application of herbicides is discouraged when thinning because plant species diversity is decreased. Use caution when introducing cattle. Grazing of forests can greatly reduce the herbaceous and shrub stages. This results in a loss of diversity in the understory vegetation important to songbirds. Thinning and prescribed fire can be used together to benefit specific species (Figure 3).

Prescribed Burning

Prescribed burning is used to achieve many wildlife management objectives including wildfire hazard reduction, wildlife habitat enhancement, site preparation, and controlling plant community composition and structure. Prescribed burning sets back succession like a natural fire and acts to thin a stand. Areas of early succession or open woodlands benefit and attract many songbird species (Figures 2 and 3). Fire reduces litter, which suppresses forbs and grasses, and promotes fruiting of some types of understory shrubs and soft mast production. Fire also topkills small-stem midstory hardwoods and allows for resprouting of desirable plants such as wild grape. Protect coverts of plum, blackberry, sumac, and shrubby transitions from fire on a periodic basis. Complete protection may lead to senescence and decline of fruit production by these shrub species.

The area being managed should be subdivided so only a portion of the total area is burned each year. This will insure adequate escape and nesting cover is available on adjacent unburned areas. We recommend a three to five year burning cycle to allow recovery of shrub species and to meet the structural needs of a variety of songbird

Forest and Breeding Bird Succession After Clearcutting

Figure 2.

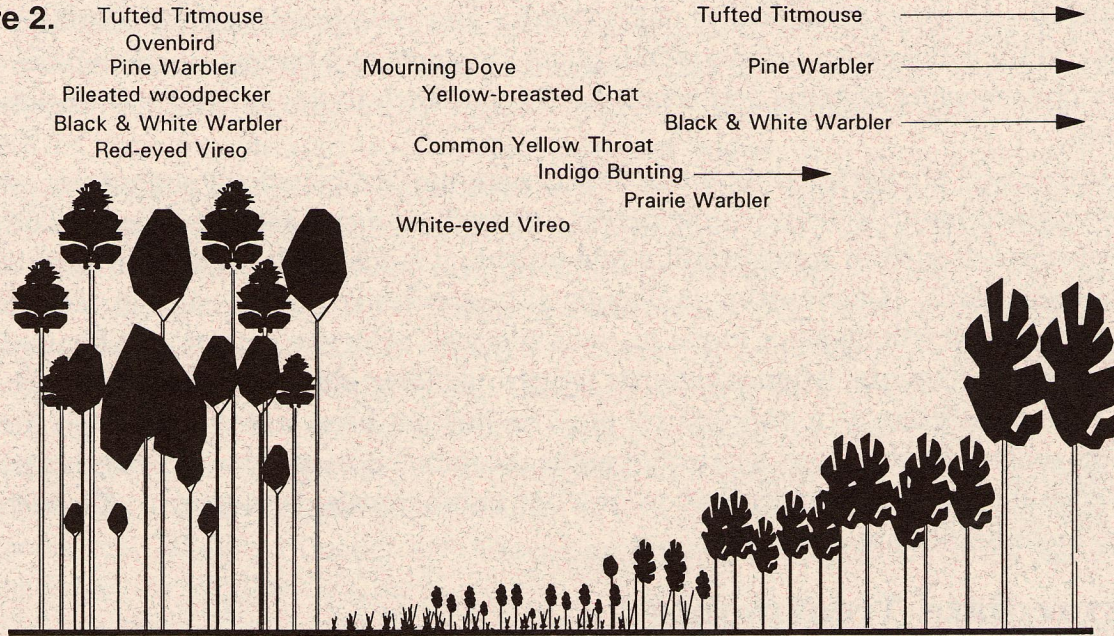
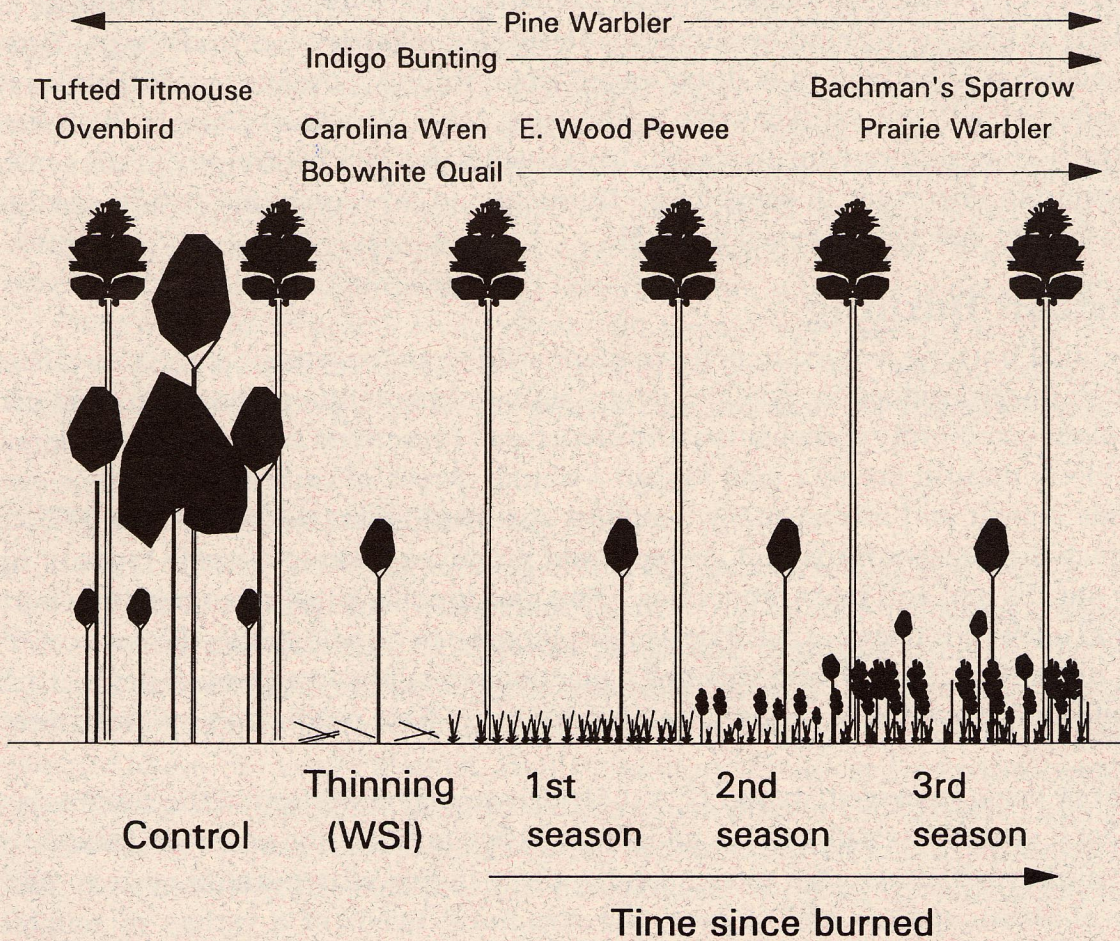


Figure 3.



species. Consider timing of the burn to produce the maximum wildlife benefit. Dormant winter season burns enhance springtime production of plants and insects essential to songbirds. To avoid breeding season disturbance, conduct burns before April. Frequent winter burns lead to a very homogenous plant cover; therefore, we recommend occasional late summer burns.

Use prescribed fire with caution in hardwoods, particularly where quality hardwood management is an objective. Also realize some species, such as the ovenbird and other ground nesters, may be disadvantaged in the short term. However, other ground nesters, such as wild turkey and bobwhite quail, may be benefited.

DIRECT IMPROVEMENTS

In general, we recommend few direct improvements since proper management of the forest or a community better meets the variety of habitat requirements for different songbirds. Realize most direct improvements may be of limited benefit to the species, but may enhance visibility of the species to the landowner. This is certainly a viable management objective.

Provide a source of water. A bathing area should be no more than two to three inches deep. The bottom needs to be a relatively hard surface such as rock or gravel. There should be no ground cover within 10 to 15 feet of the water. Flat stones or an overhanging branch provide perching space.

Dead branches and loosely piled brush provides a quick emergency shelter, roosting, and nesting area. Large piles may last 10 to 15 years. Discarded Christmas trees make excellent brush piles. Construct or maintain brush piles within or along the edges of openings.

Establish and maintain clumps of sand plum, blackberry, sumac, or any dense growing fruiting plants for cover or late winter food. Allow and maintain fence lines to provide support for preferred vines such as Virginia creeper, trumpet vine, morning glories, and wild grape.

Construct and maintain nest boxes and artificial cavities where well suited. This is particularly beneficial in young stands where cavity trees are limited. In open areas, place bluebird boxes on a fence and small boxes among clumps of trees for chickadees and wrens. Designing artificial tree cavities in logs or directly in a living tree for specific species encourages nesting by those species. For ideas on snag management see Oklahoma Cooperative Extension Wildlife Management Notes No. 4, "Snags, Cavity Trees, and Downed Logs."

OTHER SPECIES THAT BENEFIT FROM SONGBIRD MANAGEMENT

Management techniques designed to promote diversity and abundance of songbirds will also benefit numerous other wildlife species which are considered a part of the management plans and objectives. The following list provides some examples.

Open Fields	Early Regeneration	Forested Wetlands	Mature Forests
Bobcats	Bobcats	Bobcats	Bobcats
Coyotes	Coyotes	Coyotes	Coyotes
Quail	Rabbits	Great blue herrons	Fox squirrels
Red foxes	Gray foxes	Wood ducks	Gray foxes
Kestrels	Small mammals	Mallards	Red foxes
Ret-tailed hawk	White-tailed deer	Beavers	Raccoons
Small mammals	Wild turkeys	Muskrat	Wild turkey
		Raccoons	

MANAGEMENT OPTIONS/SIP COST-SHARE

OPPORTUNITIES (See your Forest Stewardship Planner for details.)

Low Intensity

Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)

Planting of food and cover species (SIP-2,4,5,6,8; DH3, FP3, NG3, SL3, WA3)

Medium Intensity

Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)

Planting food and cover (SIP-8; DH3, FP3, NG3, SL3, WA3)

Erecting nest boxes and artificial cavities (SIP-8, WH3)

Brush pile construction (SIP-8, BP3)

High Intensity

Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)

Planting food and cover (SIP-8; DH3, FP3, NG3, SL3, WA3)

Erecting nest boxes and artificial cavities (SIP-8, WH3)

Brush pile construction (SIP-8, BP3)

Creating forest openings (SIP-8, SO3)

Wildlife thinning (SIP-8, HT3)

Acknowledgments: U.S. Forest Service, Wildlife Habitat Management Handbook; Service Foresters Handbook; Stewardship Wildlife Notes from North Carolina Extension Service and Oklahoma Bird Life, by Frederick M. Baumgartner and A. Marguerite Baumgartner were used as a basis for some of the material contained in this publication. When available or different, Oklahoma based research information was used.

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