

Wildlife Management Notes



No. 3

Wild Turkeys

Three subspecies of wild turkeys occur in Oklahoma: the eastern, the Rio Grande, and the Merriam's. The eastern subspecies inhabits the pine-oak and oak-hickory forests of eastern Oklahoma. Rio Grande turkeys occupy much of the state, except the far southeastern portion, and interbreed with the eastern subspecies where their ranges overlap. Merriam's are thought to occupy only a small portion of northern Cimarron county in the panhandle of Oklahoma. This management guide emphasizes habitats with a forest or woodland component but also includes some information related to prairie habitat types.

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HABITAT REQUIREMENTS

Good turkey habitat across most of Oklahoma contains a mixture of mature woodland stands and open native grassland areas. Mature woodlands should be composed of either mixed hardwoods, pine-hardwood or pure pine, and the understory should be relatively open. Turkeys will also use cropland when interspersed with woodlands and native grasslands. Although tree cover is sparse in western Oklahoma, it still provides good to excellent habitat when suitable roost trees, such as cottonwood, and native grasslands are available.

Trees provide food (e.g., mast, buds), cover, and roost sites; native grasslands or forest openings provide food for adults, but perhaps more importantly, foraging habitat for poults. Poults need open areas that they can easily move in and "bugging" areas for feeding. In extensively forested areas, timber management can be beneficial to turkeys by creating regeneration areas to provide early stages of succession.

In eastern Oklahoma, hens often nest near primitive roads and trails, or other types of edges. These sites may be selected for ease of access to travel lanes, easy brood movement, and the periodic soil disturbance along primitive roads that creates brood rearing habitat. However, nesting hens often abandon areas with sustained disturbance by vehicles, humans, or other animals such as free-ranging dogs.



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Usually hens will not return when flushed from the nest. Nesting hens select both forested sites and non-forested sites with moderately dense ground level vegetation that provides nesting cover but also allows the hen to watch for approaching predators. Hens frequently nest in slash piles and downed treetops associated with logging. Nesting sites that provide complete concealment on one side, and partial cover directly overhead are preferred.

Turkey nests in the western part of the state have similar nest structure but within a different habitat type. Rio Grande hens prefer midstory shrubs that provide overhanging cover. As with the eastern hens, Rio Grande hens need understory grasses that provide horizontal cover for concealment. Some evidence suggests that hens may select sites near water. However, this may reflect that suitable overhead shrub cover is associated with more moist habitats.

Rio Grande turkeys require large trees with open canopies and understories, away from disturbance for roost sites. Cottonwoods, elms, and other large trees found along riparian areas provide excellent roosting habitat. Sometimes lack of sufficient roost sites may be a concern for management of Rio Grande habitat. On occasion, turkeys have been known to roost on artificial structures (power lines and supports, oil tanks, etc.) when suitable trees are unavailable.

Encroachment of eastern redcedar in riparian areas in central and western Oklahoma is a major concern because it leads to roost abandonment. Turkeys prefer an open understory beneath roost sites for ease of access for flying to roost and flying down in the mornings. As cedar trees gradually encroach under roost sites it becomes increasingly difficult for turkeys to use these sites without flying great distances. Over time, the cedars may cause decline of the native trees and assert dominance in the canopy.

FOOD

Turkeys may be called opportunistic omnivores. That is, they will eat a wide variety of available foods. About 90 percent of an adult turkey's diet is plant material (including seeds), the remaining is animal matter made up of insects and snails. Snails provide calcium that hens need for egg production. Occasionally, turkeys may eat small snakes. Poults rely almost entirely on insects, because of high protein needs. A poult's diet gradually shifts to a greater plant component at about four weeks of age. When available, hard mast (acorns, etc.) is a preferred food item of juvenile and adult in the fall and winter. A more detailed list of foods can be found in Table 1.

In areas with large blocks of contiguous forest, openings or regeneration areas may provide food (grass seed, insects, fruit, forage) during warm months and serve as breeding, nesting, and brood-rearing areas. Food plots generally are not a viable alternative to early successional openings with native vegetation. Although food plots periodically may be of some benefit, they are not cost effective and do not provide the diversity of foods needed throughout the year. Typically, the plants used in food plots are usable for one-two seasons.

Table 1. Seasonal food items of wild turkeys in Oklahoma

<u>WINTER</u>	<u>SPRING</u>	<u>SUMMER</u>	<u>FALL</u>
acorns	acorns	beauty berry	acorns
cherry seed	blackgum fruit	blackberry	beauty berry
corn	buds	cherry	blackgum seed
ferns or moses	burdock	crabgrass	buds
grape seed	corn	dogwood fruit	cherry seed
panicum leaves	dogwood fruit	grape	chittamwood
insects	grass or sedge leaves	grass leaves	crabgrasses
juniper berries	hackberry fruit	hog peanut	dogwood fruit
lespedeza seed	insects	huckleberry	insects
misc. forbs	misc. forbs	goats rue	grass or sedge leaves
sedge leaves	oats	insects	grass seed
sumack seed	fragrant sumac berries	misc. forbs	grape
snails	snails	panic grasses	lespedeza seed
tick trefoils	tree buds	paspalum	misc. forbs
winter wheat	wheat	smartweed	panic grass seed
		snails	paspalum seed
			pine seed
			sheep sorrel
			snails
			sumac seeds
			sunflower seeds
			tick trefoils



COVER

Brooding and nesting habitat includes areas of low or sparse ground cover that contain insects where poults freely can move about and easily catch the insects. This includes wooded edges of native grasslands and some pastures, sparse brushlands, recent regeneration areas, and open fields. Although dense ungrazed tallgrass prairie can provide escape cover for broods and adult turkeys, it is not ideal brood rearing habitat. Adequate cover should effectively hide the brood but leave an unobstructed view for the hen to watch for predators. Hens may use open woodlands with low ground cover for nesting, particularly in bottomland hardwood forest types. Overhead cover is needed to protect nesting hens from predatory birds such as owls, while dense shrubs and grasses supply needed cover to protect from mammalian predators.

Escape cover includes areas where turkeys can avoid harassment. Examples include areas with logging slash, stands with dense understory, sapling stands or extensive woodlands and swamps. Dense ungrazed tallgrass prairie or shrublands can also provide escape cover. Cedar thickets and pine regeneration areas also are occasionally used for escape cover if the trees are scattered in nature and crown closure has not occurred.

In the Ouachita mountains, eastern turkeys may roost in pines or open-crowned hardwoods on sheltered sites (protected from the prevailing winds) off the top of ridges, on flats in mountainous terrain, along stream corridors, or in strips of timber adjacent to pasture, cropland, or other types of open areas. In the Ozarks, they chose similar sites but roost in hardwoods because of the lack of pines. Eastern wild turkeys use bottom-land hardwoods along rivers and other riparian zones for winter cover as well as roost sites.

Cover for the Rio Grande subspecies includes dispersed cedars and motts of deciduous trees, especially taller trees along riparian corridors. Dense stands of cedar are unsuitable for turkeys and a cedar midstory under roost trees may cause abandonment of an otherwise suitable roost site. Woody cover such as elm, sumac, or plum thickets extending up drainages in prairies provides a necessary component for travel or escape cover.

WATER

Generally, turkeys do not need free-standing water. Sufficient water is found in their foods (fruit, succulent plants) for their needs. However, turkeys will use streams, ponds, lakes, and other standing water when available, especially during dry conditions.

HOME RANGE

The home range of wild turkeys varies with season and habitat condition. Home ranges are irregular in shape. Daily movements can exceed 2 miles and cover several hundred acres. Home ranges of eastern wild turkeys varies from 700 to over 8,000 acres. The Rio Grande wild turkeys home range varies from 350 to over 60,000 acres. The larger home ranges for both subspecies are for hens in the months prior to nesting. Annual averages are less than half of the maximum acres given for home ranges.

STANDARD MANAGEMENT PRACTICES

In eastern Oklahoma, timber stands from 40 to 100 acres in size are generally suitable for eastern wild turkeys. Stands should be distributed such that less than one third of a home range is occupied by stands in the zero-to 20-year age-classes. This permits use of abundant fruit, forage, insects, grass, and forb seeds resulting from regeneration cuts and site preparation. At the same time, mature timber stands with a hardwood component will provide hard mast. Benefits of regeneration usually last three to five years because canopy closure of tree crowns shade out desirable understory plants. On poorer sites the benefits may extend an additional two to three years because of slower growth of planted trees.

Managers should maintain a well distributed diversity of habitat conditions to provide a year round foraging base. It is important to provide areas with open understory interspersed with areas of horizontal cover or woody structure. Maintain streamside management zones (SMZs). In areas intensively managed for pines, retention of hard-

wood connecting corridors along SMZs provides travel corridors. This is especially important for spring dispersal, and for ease of travel to feeding and roosting areas.

Interspersed prairie, riparian corridors, pastureland, and cropland meet similar needs for Rio Grande turkeys in the western and central areas of the state without an abundant timber resource. Shrub patches such as blackberry, sumac, and plum in western Oklahoma prairie habitats provide nesting cover.

Rotation

Both pine and hardwood forest types should be managed as a sawtimber rotation where managing for turkeys. In hardwood types, hard mast-producing species should compose 20 percent to 50 percent of the stand basal area. A rotation age of 100 years is best in hardwood stands to maintain mast production. Mast production will begin to decline in oaks greater than 26 inches in diameter and 100 years of age. On sites with either pine or hardwood management types less than 80 years of age, hard mast may be produced in key areas such as stand inclusions and along drainages. Retaining scattered hardwoods in pine types is beneficial to turkeys as well as other species.

Regeneration

Prior to regeneration cuts, identify and paint boundaries of all hardwood inclusions or key areas for protection of mast producing trees. During regeneration, retain or develop approximately 20 percent of the stand basal area in stands managed for turkeys in hard-mast-producing species. Regenerate all pine types by either clearcutting, shelterwood or seed tree cuts. Regenerate hardwoods by shelterwood cuts or selective cutting. Diameter limit cuts work well in theory but in practice generally amount to high grading a given stand.

Regeneration cuts generally provide excellent nesting and brooding habitat for three to five years and possibly longer on poorer sites. Many hens prefer to nest in regeneration areas in downed logging slash. Hens select nest sites based on proximity of vegetation characteristics that will benefit the hen and young brood. Young poults need cover they can readily move through, but dense enough for protection from predators. The influx of sun on new regeneration cuts stimulates growth of annual forbs and grasses, providing superb structure for nesting hens and poults. It also attracts an abundance of insects for broods.

Schedule regeneration so that the timber harvest is completed before mid-April or after mid-July. Avoid working any slash or cutover areas in the nesting and brooding season (April through July and into August) if possible. On regeneration areas, allow native vegetation to establish, or if necessary, seed access roads and logging decks with native plants. Access to areas managed for turkeys should be limited by installing gates, tanktraps or roadblocks. It is particularly important to protect nesting areas from disturbance to reduce nest abandonment by hens.

Bottomland hardwoods should not be converted to pine types. Gum and cypress

ponds should be retained. Fire should be used for site preparation in upland hardwoods to favor oak regeneration. The use of fire is particularly important when regenerating oaks. It gives oaks a competitive advantage over maples and other less desirable tree species.

Intermediate Treatments

Intermediate cuts provide an excellent opportunity to control stand density plus vertical and horizontal structure. Precommercial thinning reduces canopy cover and prolongs the benefits of abundant herbaceous plants and soft mast producing shrubs that are important to nesting hens and for brood-rearing habitat in regeneration areas. The new growth of grasses and forbs attracts hens and poults.

Wildlife stand improvement (WSI) is the cultural means to insure a sufficient quantity and variety of foods in key areas. WSI is similar to Timber Stand Improvement (TSI), and involves removal of competing codominant trees. Retain dogwoods, viburnums, grapes, blackberry, mulberry, serviceberry, and hackberry. Avoid complete removal of soft-mast-producing species.

Thin as often as feasible, and thin to at least a basal area of 60 to 70 square feet per acre in mature pine stands or mixed pine-hardwood stands. In hardwood stands where epicormic branching may be a problem, thin back to a basal area of 80 to 90 square feet per acre. Follow thinnings with prescribed fire. Row thinning in mid-rotation pine plantations, in conjunction with thinning of trees within rows, is beneficial for turkeys, especially when followed by prescribed fire to control hardwood understory. Sometimes herbicides are used for hardwood control, but realize this may remove many preferred forbs and legumes used by turkeys if applied with a mist blower, aurally or some other broadcast type application. One option is to use selective methods such as single stem injection or basal stump spraying for application of herbicides.

Opening up pine plantations by thinning and using fire will provide good brood rearing habitat and improve what was formerly marginal nesting habitat. When conducting thinnings, retain mast-producing trees in key areas along drains, in SMZs and throughout the stand for future mast production. If necessary, plant mast producing trees.

As with regeneration areas, gate logging roads. Logging roads may be lightly disked to encourage native annual forbs and grasses. This approach is favored over planting. Where erosion is a potential problem, use annual rye and clovers and mulch with straw.

Avoid using sercia lespedeza to seed logging decks and skidder trails.

Eliminate fall tillage of crops when feasible, and leave small areas of unharvested grain. Plantings of ladino clover, vetch, and crimson clover in odd areas or food plots can supplement native food supplies. Remember that food plots are not a cure for broader habitat problems. Providing appropriate nesting and brood rearing habitat is far more critical than providing food, because of the abundance of native foods.

Prescribed Burning

Prescribed burning is highly recommended for turkey habitat management where pines are the primary overstory species. Periodic fire tends to favor understory species

that require more open habitats and periodic disturbance. Burning improves palatability and nutrition of understory plants, plus it stimulates seed production and fruit production. Turkeys eat the fresh growth of forbs, grasses, legumes and buds following burning in late winter and early spring. Open understories of sawtimber pine stands that are burned regularly also produce rich insect crops for broods.

Burning cycles of three to five years reduce large sprouts to shorter new growth and remove much of the "rough" that suppresses desirable herbaceous growth. It also kills small diameter trees in the midstory. More frequent burns limit soft mast production and promote a more open aspect and grassy understory. Longer cycles permit development of a midstory component that may be undesirable. Use a rotating combination of frequent fire cycles and less frequent fire cycles rather than a set burning schedule. Schedule frequent fire where midstory development is becoming a problem.

Avoid burning during the nesting and brooding seasons from mid-April through mid-August. Burns in February and March generally are recommended for turkeys. Males prefer to use recent winter-burned sites for mating displays and courtship. However, hens tend to avoid nesting in recently winter-burned areas because of the lack of concealment cover. For this reason, burns should be accomplished in a patchwork fashion over the landscape. Late summer burns create a natural mosaic within stands and a diversity of understory structures beneficial to turkeys. This may be particularly important to develop suitable nesting habitat in burned stands.

Livestock Grazing

The most important aspect of grazing management is stocking rate. Stocking rate is established by balancing the needs of plants with the needs of the grazing animal. Height and composition of the vegetation can be changed by changing stocking rate. Stocking rate must be flexible, because livestock carrying capacity changes from one year to the next depending on precipitation and to a lesser extent temperature. Carrying capacity is the number of animals that the vegetation can support indefinitely. Therefore, stocking rate must be flexible within a grazing system. For more information on livestock grazing management, see OSU Extension Facts F-2871, *Stocking Rate: The Key to Successful Livestock Production*.

Grazing systems may be rotational or continuous. Each management system has advantages and disadvantages for both livestock and turkeys. Continuous grazing at a moderate stocking rate will give a mosaic of different vegetation heights and less plant diversity from selective grazing. Rotational grazing will give more uniform heights and higher plant diversity from less selective grazing. In general, a mosaic of lightly and heavily grazed patches is desirable. A grazing plan should be part of an overall management plan and must be customized to the particular landscape and objectives of the land manager.

A cow/calf operation can be beneficial because forage utilization will tend to be uneven and create a mosaic of habitat patches. These patches will provide diversity and cover. The uneven grazing distribution also will improve nesting habitat. Patch burning both in the late summer/early fall period and in spring actually will create some forb

diversity, as these areas will be selectively grazed by livestock. It will improve brood rearing habitat and food availability. Therefore, it will increase the likelihood of growth in native populations.

Intensive early stocking can be a disadvantage to nesting turkey hens when late winter or spring burning on an annual basis is part of the overall management plan. In this management scheme, drainages and riparian areas should be periodically protected to provide adequate nesting habitat. Livestock should be removed by July 10 to allow for seed production of native grasses and forbs.

As a general practice, we recommend against an intensive weed control program. Broad scale spraying for weeds will eliminate many beneficial food plants that provide an excellent food source for turkey. Some weed problems can be managed through prescribed grazing. See OSU Extension Circular E-926 for more information on prescribed grazing. **Especially note that conversion from native grasses to introduced grasses is detrimental to the wild turkey and other wildlife species.**

Direct Improvements to Habitat

Food plots provide only limited benefit for wild turkeys. Food plots and feeders congregate turkeys thus increasing the potential for predation and poaching. They also increase chances of disease transmission. Food plots and feeders may decrease mortality in extreme situations such as prolonged snow cover or in cases of total mast failure or drought. However, these instances are rare. Instead, efforts should be directed at improving habitat through management of the native plant community.

Openings in both pine and hardwood types are necessary for brooding range, and are particularly important where mid-rotation stands predominate. Openings such as deserted roads, logging decks, old farmsteads, pasture, and regeneration areas provide a diversity of cover and food for wild turkeys. If openings are not available, provide at least one opening from one to five acres in size for every 160 acres.

Cover is an important component for wild turkey habitat. Mow, chop, or disk small open areas adjacent to wooded areas to maintain early successional vegetation. In agricultural areas, unharvested portions of crops should be left adjacent to wooded areas. Allow odd areas to grow up in brush and rough vegetation. Mowing is not recom-



mended in nesting areas during nesting season (April through August).

Thin or regenerate portions of areas managed for hard mast as needed, but retain cavity trees for other wildlife species. Avoid high-intensity fires in key areas for hardwood mast production. If necessary, plant native shrubs such as blackberry, sumac, and huckleberry to provide cover and food. When large areas are to be harvested, attempt to leave one potential roost site per square mile with travel corridors to the residual stand. Roost trees should be protected in Rio Grande range and planted where they are of limited availability. Eastern red cedar should be removed in and around all roost sites.

OTHER SPECIES THAT BENEFIT FROM WILD TURKEY MANAGEMENT

Numerous other wildlife species benefit from turkey management. Rather than solely focusing on turkey management, plans should emphasize the native plant communities of which turkeys are only a part. Because wild turkeys require both early and late successional habitats, a wide variety of wildlife species with more specialized habitat requirements are often associated with turkey management.

Old Fields/Prairie	Early Regeneration	Mature Forests
American goldfinch	American goldfinch	Acadian flycatcher
bobwhite quail	bluebird	black and white warbler
cottontail rabbit	bobwhite quail	black bear
field sparrow	gray fox	brown-headed nuthatch
grasshopper sparrow	indigo bunting	fox squirrel
indigo bunting	prairie warbler	gray squirrel
kestrel	rabbit	great-crested flycatcher
marsh hawk	yellow-breasted chat	Kentucky warbler
meadowlark	white-eyed vireo	ovenbird
red fox	white-tailed deer	pine warbler
		raccoon
		summer tanager
		scarlet tanager
		white-breasted nuthatch
		wood thrush

MANAGEMENT OPTIONS/SIP COST SHARE OPPORTUNITIES

(See your Stewardship Planner for details.)

Low Intensity

- Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)
- Planting food and cover (SIP-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)
- Planting herbaceous and woody understory plants (SIP-8; UH3, US3)
- Prescribed burning (SIP-8; PB3, PB4)

High Intensity

- Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)
- Planting food and cover (SIP-8; DH3, FP3, NG3, SL3, WA3)
- Planting herbaceous and woody understory plants (SIP-8; UH3, US3)
- Prescribed burning (SIP-8; PB3, PB4)
- Creating forest openings (SIP-8; SO3)
- Wildlife thinning (SIP-8; HT3)
- Releasing mast trees (SIP-8; MR3)

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