Forest Management for Wild Turkeys

The eastern wild turkey (Meleagris gallopavo silvestris) has been associated historically with southern forest ecosystems. Turkey populations were decimated in the late 1800's to early 1900's because of uncontrolled harvest and habitat destruction. Restoration efforts allowed populations to recover, and Southern wild turkeys, now number more than 1 million, with an estimated 250,000 to 350,000 in Mississippi. Mississippi's annual wild turkey harvests reflect the statewide turkey population expansion. Harvest estimates have increased from 253 birds harvested in 1942 to more than 59,000 gobblers taken in 1987.

Forest Habitat Types

Forests dominate the South, occupying more than half the land area (USDA Forest Service, 1988). About one third of the forest area is occupied by pine types, with one third of this area (10% of total) in planted pine. About 17 percent of the Southeast is occupied by bottomland hardwood forests. About 90 percent of the area's forested acreage is privately owned, less than 25 percent of which is owned by the forest industry. Timber is one of the most important agricultural crops in the Southeast.

Upland pine-oak and bottomland oak-gum-cypress ecosystems are dominant in Mississippi. Pine forests include loblolly-shortleaf pine and longleaf-slash pine. Hardwood forest types include sweetgum-water oak, white oak-red oak, hackberry-elm-ash, overcup-bitter pecan, cottonwood, willow, and cypress-tupelo gum. Intergrades include mixes of various pine and hardwood species.

Early biologists described ideal turkey habitat as a mix of mostly mature pine and hardwood stands with open understories and interspersed with grassy openings. They thought turkeys' needs included an abundance of water and little human disturbance. The fact that turkeys survived indiscriminate hunting only by finding refuge in large expanses of remote forest led biologists to promote this "ideal habitat" concept.

Current thinking is that turkeys tolerate a greater variation in habitat than originally thought. Restoration of turkeys through trapping and transplanting, people's attitude changes, better protection, and habitat improvement have made the difference in turkey numbers. Turkey populations are now common in forested habitats that were once considered marginal.

Adequate forestland is critical to maintaining viable populations of wild turkeys, particularly when forest management provides an interspersion of different forest types and ages, mixed with openings that can provide diverse food sources, brood rearing habitat, edges for nesting, and room for courtship. Turkeys have been found to do well in forested landscapes that contain 15-65 percent openings, whether in fields, cropland, pastures, or early successional stages of forestland.

Seasonal Habitat Needs

Nesting (Spring)

Turkey hens nest in a variety of habitat types, including pine forests and young cutovers/regeneration areas, old fields, hay fields, and rights-of-way. Nest sites generally have dense, herbaceous cover and some shrub cover at the ground level, with some form of woody structure around the nest. The majority of nests are located within 10 yards of a forest edge such as a logging road or firebreak. Research conducted in east-central Mississippi indicates that hens nest in pine stands, including unthinned, mature loblolly stands and young (2- to 4-year-old) loblolly pine plantations. Plantations younger than 2 years and older than 4 years are generally avoided. In large blocks of intensively managed pine plantations, hens have been found to nest in 15- to 20-year-old stands that are thinned and burned. Nesting success rate was much greater in mature pine forests (60%) than in the preferred young plantations (less than 20%). The vegetative conditions necessary for nesting can be maintained by late-winter burning at intervals of 3 years. Mowing or bush-hogging also can be used, but these three activities should be avoided during the spring-early summer nesting season (March-July).

Broods (Summer)

Young turkeys consume mostly insects the first couple of weeks after hatching, and thereafter quickly begin to pick up fruits and seeds. For poult protection, vegetation dense enough to afford some cover from predators is necessary. Forest edges adjoining fields and openings can provide this cover and are excellent brood habitat during this vulnerable time. Forest harvesting activities can be planned to provide a good mix of mature to young forest. In central Mississippi, mature bottomland hardwood forests have been shown to be preferred habitat for broods, where sparse shrubs and understory and moderate ground cover of grasses, sedges, forbs, and vines were found. Broods used burned pine plantations older than 10 years but avoided plantations burned less frequently than every 2 years. Plantations 15-20 years old that have been thinned and burned often provide good brood habitat. Overall, many different types of forested habitats can be used by hens with broods, as long as adequately dense herbaceous vegetation (for insect production) with some brushy cover nearby is available. Ideally, brood habitat should be interspersed with nesting habitat to avoid long distance movements by broods. Thinning and burning of pine plantations will improve brood habitat conditions. Patchy burns, with burned areas next to unburned areas, will provide the best habitat.

Range Shifts

During the fall, turkeys begin to shift their ranges as food sources change to such items as dogwood fruits and oak acorns. Many times forests will provide better winter range for turkeys than other vegetative types, as mast foods such as acorns become available. Turkeys may move from pine plantations into mixed pine-hardwood or hardwood stands during this period, but well-managed (thinned and burned) pine stands may continue to see heavy use in winter (pine seed is good turkey food). In years when hard mast crops are light, turkeys may heavily use these and other forest types and fields.

During the spring, as winter flocks break up, a variety of forested habitats are used, but turkeys tend to move toward areas with greater amounts of openings (e.g., pastures). Openings are used

extensively during the spring breeding season as areas to display and mate. They also provide a food source of greens and insects.

Other Habitat Needs

Roosts

Turkeys roost in a variety of forested habitats but often prefer to roost in conifers located adjacent to a water source. On upland forested sites, turkeys frequently roost on slopes near ridgetops or knolls. Many times these roost sites offer protection from adverse weather, with the particular roost tree chosen for protection. Turkeys will roost in pine plantations, mixed pine-hardwood stands, and bottomland hardwoods. Flooded riverfront hardwood forests and bald cypress trees are frequently used as roost sites in the Delta.

Roads

Roads can be detrimental or beneficial to turkeys, depending on management and protection. In large expanses of pine plantation forest, turkey use is positively correlated to the presence of spur roads. Roads that are daylighted (opened up) will provide more natural green vegetation for insect and seed production, or they can be planted in cover crops to prevent erosion and provide the same benefits of natural vegetation for turkeys. Roads that are closed with locked gates are important for protection of wild turkeys.

Water

The relationship between turkey populations and availability of water is not well-documented, but turkeys can move long distances to get free water or can obtain water from vegetation, fruits, and insects they consume. Free water may be important during periods of drought.

Forest Management

Forest Service projections show a slow decline in forest acreage across the Southeast over the next several decades. The area currently in pine plantations is projected to double during this same period. Natural pine forests are projected to decline by about half, and mixed stands are projected to decline by about 22 percent. Some agricultural land is being reforested under programs such as the Conservation Reserve Program.

Pine Plantations

As pine plantation acreage increases in Mississippi, more intensive management will be required to maintain diverse turkey habitats. Rotation length should be 40-60 years, if economically feasible. Harvest cut areas should be kept as small as possible (10-100 acres), with age class dispersion of unharvested, adjacent stands of at least 5-7 years. Shapes of clearcuts should be configured to provide edges for turkeys to nest along--but not in a manner that will increase predators success in location of nests. Stream-side management zones (SMZs) should be delineated before harvest and treated as separate, unburned, manageable stands from harvested

pine plantations. If possible, maintain at least 15 percent of the pine plantation area in SMZs. SMZs can be particularly important to turkeys for travel areas, roosting sites, and as a source of mast and other food source production not normally found in plantations. Protection of islands of mast- producing trees in clearcut areas can provide additional food sources. Prescribed burning should be conducted in stands as early as possible and, preferably, should be patchy winter burns on a 3- to 5-year rotation after plantations are 10 years old. Burning improves palatability and nutrition of understory plants, stimulates some types of fruit production, and maintains open understories. Commercial thinning should be conducted at least twice during the rotation of a stand, and, if affordable, volunteer hardwoods that provide a food source within plantations should be protected.

Mixed Upland Pine-Hardwood Forests

Mixed stands should be maintained as natural stands where feasible. In harvesting operations, maintain a good mix of hardwoods and pines of mast/fruit-producing age. Thinning, seed tree or shelterwood regeneration cuts, and burning can be conducted to promote mast production and maintain needed herbaceous and shrub components in the understory. Protect mid-story species such as flowering dogwood and other fruit producers.

Bottomland Hardwood Forests

Bottomland stands potentially can produce large amounts of hard mast in a particular year. Bottomland hardwoods should be maintained in a vigorous state to take advantage of the potential during these good mast-production years. Rotation lengths of 60-90+ years should provide adequate age distribution of healthy mast-producing trees. Frequent, selective improvement harvests, thinnings, and group select cuts provide needed timber harvest while maintaining turkey habitats. Fire should be excluded from bottomland stands. Roost trees adjoining water sources as well as SMZs along bayous, sloughs, and minor and major creeks and rivers should be maintained.

In general, all timber management operations should include erosion control and site restoration work, where disturbed areas are revegetated with plant species such as clover, bahia grass, wheat, or others that may provide feeding, nesting, or brood-rearing cover.

Tips for Improving Wild Turkey Habitat

General:

- Create stands up to 100 acres in size.
- Distribute stand ages.
- Maintain SMZ's of hardwoods.
- Establish long rotations in hardwoods (60-90+ years).
- Thin timber frequently during rotation.

Prescribed Burning:

- Burn frequently (3 to 5 years) to encourage herbaceous growth.
- Limit burns to winter months.

Regeneration:

Direct Habitat Improvements:

- Maintain mixed stands when possible.
- Regenerate pine types by clearcut or seed tree methods.
- Encourage up to 50% of hardwood types as hard mast species.
- Do not convert bottomland hardwoods to conifers.
- Retain roost trees and cypress ponds.
- Provide openings planted with clover.
- Eliminate fall tillage of crops and leave some grain unharvested.
- Avoid nesting and brooding areas from March through June.

Wild Turkey Foods by Habitat Type			
Habitat	**Foods**		
Openings	**Grass/Seeds**	**Forage**	**Insects**
	Paspalums Panicums Legumes	Clovers Grasses Sedges	Grasshoppers Millipedes Insect Larvae
Moist Bottomland	Snails	Insects	Worms
Pine Plantations	Grasses, legumes, seeds	Herbaceous green forage	Insects, soft mast, pine seed
Mixed Pine/Hardwood Stands	**Soft Mast**		**Seeds**
	Dogwood Blackberries Huckleberries Blackgum Spice Bush	Grapes Dewberries Blackhaw Cherries	Longleaf Pine Sweetgum Magnolia
Mature Hardwood	**Hard Mast**		
	Acorns	Beechnuts	Pecans

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