Case Study: Hardeman County, TN

This case study illustrates the conservation planning process for a moderate-sized property with wildlife conservation priorities. Illustrations focus on practice selection in the context of bobwhite habitat requirements and conservation plan development for a competitive CRP bid submission. Unlike the other properties featured in this series, management activities on this property are still in the planning phase and have not yet been implemented.

The property featured in this case study is a 1471 acre tract located in Hardeman and Fayette Counties, Tennessee. Hardeman and Fayette Counties are in the southwestern part of Tennessee in the Coastal Plain Physiographic Province. Forestry and farming are the primary land uses in these counties. However, the proximity to Memphis and Jackson, Tennessee has produced high human population growth, averaging 2-3%/year over the last 5 years.

This property is held in a partnership by 2 individuals that desire to remain anonymous. The property was recently acquired by the current owners, whose primary objective is to protect the natural landscape and enhance the wildlife value. Their primary use of the property will be recreational hunting. Northern bobwhite is the focal species of management concern and eastern wild turkey and whitetail deer are of secondary interest. After implementing wildlife habitat enhancements, the owners intend to protect these resources with a conservation easement that will allow continued farming, forestry, and wildlife management uses, but restrict development.

Site Description

The topography is rolling to moderately rolling with about 85 feet maximum relief. Upland soils are generally of Loring Silt Loam (LoB2 and LoB3) and Lexington Silt Loam (LeB2 and LeB3) associations. These soils are moderately deep, occurring on undulating upland ridgetops and stream terraces with 2-5% slopes. These soils are highly erodible. The majority of the property (830 acres, or 51%) consists of oak-hickory hardwood forest lands. Currently, about 693 acres (47%) is in agricultural production (soybean, corn, cotton).

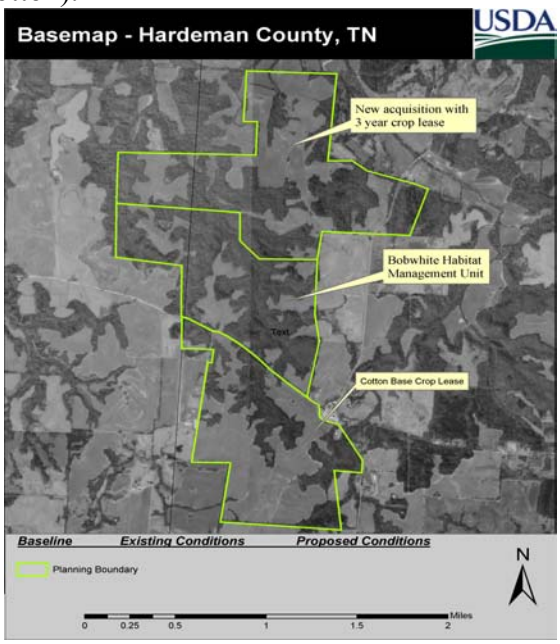

Figure 1. Management units on Hardeman County, Tennessee property.

For management purposes, the property is divided into 3 units that differ in current land use and management priorities (Figure 1, Map 1). The southern unit has an associated cotton base and will be retained

in cotton production for the foreseeable future. The northern unit has a 3-year farm lease on 244 acres, and will be retained in soybean production through the 2005 growing season. Pending a new CRP enrollment, this acreage will be offered for CRP in 2006. In the meantime, 30' field borders planted to a legume mixture will be established to control erosion and enhance bobwhite habitat quality. The central unit (430 acres) consists of 104 acres of rowcrop, in 9 small fields, with the remainder in mixed second growth hardwood forest. The central unit has a farm lease through the 2003 growing season. The 104 acre rowcrop was accepted for CRP enrollment in 2004. The primary management objective on the central unit is wildlife habitat enhancement with an emphasis on northern bobwhite. This case study will focus on the planning process for this central unit (Map 2).

Analysis

In evaluating current bobwhite habitat conditions on this central unit, it is evident that 3 essential resources are most limiting in their availability and/or distribution (Map 3). The landscape is predominantly characterized by mature, closed-canopy forest or rowcrop. Consequently, very little nesting cover (idle native grassland), brood-rearing cover (annual weed communities), or escape/winter roosting cover (shrubby woody communities) is currently available. Additionally, although the rowcrop agriculture provides an abundance of food for a short period, food resources are not uniformly and abundantly distributed through time and space. Therefore, winter food is probably a limiting factor.

Nesting cover is characterized by 2-3-year idle native grasslands with moderate litter accumulation. Perennial grasslands, dominated by native bunch grasses such as broomsedge, little bluestem, or indiangrass, provide excellent nesting cover. Periodic disturbance is required to maintain grasslands at an appropriate density. Nesting habitat is scarce on this property and most of the extant limited production is probably coming from marginal nesting habitat in road banks, woods edges, and field margins.

Brood habitat is characterized by 25-50% bare ground, nearly 100% forb canopy cover, and abundant insects. Annual plant communities and native grasslands with abundant forbs provide quality brood-rearing habitat. Brood habitat is optimal the first growing season following fire or the first and second growing season following disking. On this property, brood cover is essentially limited to scattered annual weed communities associated with crop field margins.

Winter roosting cover and escape cover is characterized by scattered shrubs and low (3 - 10' tall) woody cover, distributed among annual and perennial grasses and forbs. The closed canopy nature of the forest limits development of a shrub understory, contributing to relatively little shrubby cover across the property.

In light of these deficiencies, management activities should create native grasslands, annual weed communities, and shrub components and enhance abundance and

distribution of food resources. These components will initially be created with a suite of plantings as part of a CRP contract (Map 4) and will be maintained using planned periodic disturbance, including prescribed fire, strip-disking, and rotational food plots. These practices will create a mosaic of grass/legume communities interspersed with annual weed communities, shrubs, and food plantings.

Forest Management

The owners desire to conduct timber management on the property in a manner that will enhance wildlife habitat, especially for wild turkey. Emphasis will be placed on increasing mast production and providing roosting sites, openings, and nesting habitat. As such, they hired a consultant forester to inventory and mark timber to remove

approximately 20 % of the oak volume and most of the non-mast producing trees in a single-tree and group-selection harvest. The property contains a small amount of pine timber in several small tracts. These will be clear-cut and maintained in open land managed for bobwhite (Map 6).

CRP Enrollment

The landowners prepared a plan and submitted a CRP offering that specified a CP4d (wildlife habitat) cover practice for 103 acres in the Bobwhite Emphasis Unit. They selected a native warm-season grass (NWSG) mixture (3 pls/ac little bluestem,

1.0 pls/ac side oats gramma, 0.5 pls/ac Indian grass, 1 lb/ac partridge pea, and 5 lb/ac kobe/Korean lespedeza) that would accrue 50 points on the wildlife component (N1a) of the EBI. They offered to put 10% of the CRP acreage in CP12 wildlife food plantings for an additional 5 points on the N1b component of the EBI. Food plots will be rotationally cropped in a mixture of milo, browntop millet, and soybeans.

In addition to native warm-season grasses and forbs, approximately 10 acres of shrub plantings will be established in small patches distributed throughout the CRP fields. These shrub plantings will be planted in bicolor lespedeza and Chickasaw plum to provide winter food and cover (Map 7).

CRP Maintenance

Desired communities will be established and maintained using a number of specific management practices. During the establishment period (1-2 years), selective herbicide (4-6 ozs/acre Plateau®) will be used to reduce weed competition and accelerate NWSG stand establishment. During contract years 2-10, prescribed fire

will be used to encourage NWSG and legumes and manage litter accumulation (Map 8). Creation and maintenance of firebreaks will be required for prescribed fire implementation. Firebreaks will be disked in fall and planted to a mixture of wheat and kobe/Korean lespedeza. This practice will create a green firebreak during the winter and brood-rearing habitat during the following growing season. During contract years 4-10, light rotational (3-years rotation) strip-disking will be used to maintain a legume/forb component in the stand and manage grass density. Light disking will be accomplished in accordance with NRCS Early Successional Habitat Development Standard 647.

Summary

This case study illustrates comprehensive planning that integrates forestry, agriculture, and wildlife habitat management to achieve the landowner's overall goals. The timber and agricultural practices simultaneously produce revenue and enhance wildlife habitat value. The CRP program provides a vehicle to accomplish soil erosion and wildlife habitat enhancement objectives. Cooperation between a consultant wildlife biologist, the NRCS Area Biologist, and the local District Conservationist produced a CRP offering with a high EBI. The landowner's willingness to reduce his offered rental rate below the weighted average rental rate for the county and the occurrence of this tract in a Bobwhite Conservation Priority Area helped to ensure a competitive CRP offering.