Managing for Quality Early-Successional Habitat in the Mid-South

John P. Gruchy and Craig A. Harper
Department of Forestry, Wildlife, & Fisheries, University of Tennessee

Introduction
The loss of quality early successional habitat has had a negative impact on several wildlife species in Tennessee. Northern bobwhite (Colinus virginianus) populations have declined approximately 70 percent since 1980 as a result of habitat loss. To address this problem, the USDA-NRCS has promoted native warm-season grasses (NWSG) on lands enrolled in the Conservation Reserve Program. However, if left unmanaged, NWSG grow dense over time and habitat benefits are reduced. The renovation of tall fescue (Festuca arundinacea) is a priority of the Northern Bobwhite Conservation Initiative (NBCI), but there are questions regarding the most effective methods to eliminate tall fescue and stimulate desirable native plants. Additionally, many old-field habitats in the South have been invaded by undesirable woody species.

Objectives
1) Determine effects of management practices on vegetation structure and composition of previously unmanaged NWSG fields.
2) Determine effective methods for renovating tall fescue fields using herbicide applications and discing.
3) Determine effective management practices for reducing undesirable woody encroachment in old-field habitats.

Methods
1) Six management practices included fall discing, dormant-season mowing, spring discing, dormant-season burning, growing-season burning, and alternate-tip application of clothodim (Select at 10 oz/acre) with control areas were replicated within each of 3 previously unmanaged NWSG fields across Tennessee, 2003-2004.
2) Eight treatments with control areas were replicated within each of 3 tall fescue fields across Tennessee, 2003-2004. Treatments included fall application of glyphosate (2qts/acre) and fall application of imazapic (12 oz/acre) (both with and without discing the following spring) and spring application of glyphosate (2qts/acre) and spring application of imazapic (Plateau at 12 oz/acre) (both with and without discing the following fall).
3) Six treatments were replicated with control areas on an old-field with substantial invasion by sweetgum (Liquidambar styraciflua), red maple (Acer rubrum), and other woody species in 2004. Treatments included dormant-season burning in March, applications of triclopyr (Garlon 4 at 5qts/acre), imazapyr (Arsenal AC at 24 oz/acre), and glyphosate (Gly-4 Plus at 4qts/acre) in July, bushhogging in August, and growing-season burning in September.
4) Vegetation structure and species composition were recorded in NWSG and tall fescue fields, June – August and November, 2004, and February, April, and June – August, 2005. Invertebrate abundance and biomass were recorded in the early (June) and late (August) growing season, 2004 and 2005. Seed rain was monitored summer 2004 through winter 2005. Soil loss was estimated using RUSLE 2 software. Vegetation species composition and effectiveness of woody control were recorded for old-field treatments one growing season post treatment (July 2005).

Acknowledgements:

Preliminary Results
First-year results for one NWSG field in McMinn County, TN are presented. Treatment effects were observed across all sampling periods for 8 of 14 structural parameters. Spring and fall discing had greater percentage forb cover and openness at ground level than all other treatments. Discing and burning treatments increased percentage bare ground and decreased percentage litter and litter depth. Percentage cover of NWSG was reduced in discing treatments, but remained similar to control in all other treatments.

Old-field control

Old-field burned September 2004

Objectives

Methods

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