

RESTORING THE SHORTLEAF PINE – BLUESTEM GRASS ECOSYSTEM: AN ECONOMIC EVALUATION

M.M. Huebschmann, T.B. Lynch, D.K. Lewis, and J.M. Guldin

ABSTRACT. The shortleaf pine (*Pinus echinata* Mill.) – bluestem grass (*Andropogon* spp.) ecosystem that existed prior to European settlement is being restored on 155,000 acres in the Ouachita National Forest of western Arkansas. Preliminary analyses indicate that revenues generated in the affected area will decline because of reduced sale volumes, despite the high value of the stumpage removed near or at the end of a rotation. This paper reviews the methodology that will be used to estimate the effect this management will have on the economy of the area encompassing the Ouachita National Forest.

KEY WORDS. Red-cockaded woodpecker, shortleaf pine, bluestem grass, IMPLAN

BACKGROUND AND OVERVIEW

In 1996, the USDA Forest Service proposed an amendment to the Land and Resources Management Plan for the Ouachita National Forest. The decision to amend the forest plan was justified on the basis that there is a need “to recover the endangered red-cockaded woodpecker, [and] renew the shortleaf pine-bluestem ecosystem...on National Forests in the Southern Region” (USDA Forest Service 1996).

Desired final stand conditions include: scattered large shortleaf pine ($30 \leq BA \leq 70$ ft²/ac) and hardwood ($10 \leq BA \leq 30$ ft²/ac) stems in the overstory; few or no stems in the mid-story; and bluestem grasses and other herbaceous vegetation in the understory. These conditions will be attained by extending pine rotations from 70 years to 120 years; reducing midstory hardwoods and pines to attract red cockaded woodpeckers; burning stands at three-year intervals to control herbaceous and woody growth in the understory; and regenerating stands with natural seeding.

STUDY GOAL AND OBJECTIVES

The goal of the study is to create a framework within which the Forest Service can analyze ecosystem management practices. This goal is consistent with the proposed Public Lands Planning and Management Act of 1999, which would require that federal land managers develop a structure for resource management planning (U.S. Senate 1999).

In the process of accomplishing the goal, we will evaluate various methods of achieving the desired final stand conditions in stands containing various initial conditions; compare the revenue and cost streams relative to current management; and estimate the economic effect of the conversion on the area encompassing the Ouachita National Forest.

METHODS

Projecting Stand Yield and Value

Stand-level growth and yield will be projected (Lynch et al. 1999) assuming traditional management techniques. Projected yields from the same stands, but managed with pine-bluestem techniques, will be obtained as well. The value of the stumpage produced in these stands under the two management systems will be predicted (Ladd and Martin 1976) from historical Ouachita National Forest timber sale data. Net present value criteria will be used to compare stand treatments.

Estimating The Regional Economic Impact

The input-output model IMPLAN (MIG 1999) will be used to quantify the effect of this restoration effort on the regional economy. The region of interest will encompass counties containing: the Ouachita National Forest, forest products processors, and/or a substantial shortleaf resource.

LITERATURE CITED

- LADD, G.W., and M.B. MARTIN. 1976. Prices and demands for input characteristics. *American Journal of Agricultural Economics* 58(1):21-30.
- LYNCH, T.B., K.L. HITCH, M.M. HUEBSCHMANN, and P.A. MURPHY. 1999. An individual-tree growth and yield prediction system for even-aged natural shortleaf pine forests. *Southern Journal of Applied Forestry* 23(4). In press.
- MINNESOTA IMPLAN GROUP, INC. 1999. *IMPLAN professional, ver. 2: Social accounting and impact analysis software manual*. Stillwater, MN: MIG.
- USDA FOREST SERVICE. 1996. Record of decision: Final environmental impact statement. Amendment 22: Renewal of the shortleaf pine/bluestem grass ecosystem and recovery of the red-cockaded woodpecker. Ouachita National Forest land and resource management plan, Scott and Polk counties, Arkansas. USDA For. Serv. – Southern Region. 13 p.
- U.S. SENATE. 1999. S.1320 (proposed): Public lands planning and management improvement act of 1999. 110 p.

ABOUT THE AUTHORS

Oklahoma State University, Dept. of Forestry, Stillwater, Oklahoma: Michael Huebschmann, Thomas Lynch and David Lewis

USDA Forest Service – Southern Research Station, Monticello, Arkansas: James Guldin