ECONOMIC EVALUATION OF RESTORING THE SHORTLEAF PINE—BLUESTEM GRASS ECOSYSTEM ON THE OUACHITA NATIONAL FOREST

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POSTER SUMMARY

The USDA Forest Service is restoring pre-European settlement forest conditions on about 10 percent (155,000 acres) of the Ouachita National Forest in western Arkansas. These conditions — characterized by large, scattered shortleaf pine and hardwoods maintained on 120-year rotations, with bluestem grass and associated herbaceous vegetation in the understory — are expected to re-establish a broad habitat type missing from the landscape, one suited to supporting the recovery of the endangered red-cockaded woodpecker (USDA Forest Service 1996a, 1996b). This study was designed to forecast the amount of timber harvest volume and revenue the Ouachita National Forest may forego by adopting the shortleaf pine-bluestem grass (or pine-bluestem) management system in lieu of traditional, even-aged management.

Published growth and yield models were used to predict volumes available for harvest during a 100-year-long period in the pine-bluestem restoration area under both scenarios. Table 1 contrasts the rotation lengths and other significant characteristics of the two management scenarios. A model for predicting timber sale value was developed, and then applied to the predicted volumes in order to compare the respective revenue streams (Huebschmann 2000, Huebschmann and others 2000).

During the 100-year simulation period, the pine-bluestem scenario produces 26 percent less pine sawlog volume in the restoration area. Timber sale revenue from the area also declines by 51 percent in present-value terms. Because the pine-bluestem area covers only a small portion of the Ouachita National Forest, however, this decline translates into a Forest-wide revenue reduction of between 2 and 5 percent.

As a result of restoring the pine-bluestem ecosystem, the Forest Service expects to provide habitat capable of eventually supporting 400 breeding pairs of red-cockaded woodpeckers. By foregoing the revenue that could be generated under even-aged management, the Forest Service places an implicit value of about $1,700 per year (in present-value terms) on each woodpecker.

The pine-bluestem management regime requires successful silvicultural treatments and growth and yield forecasts outside the range of general experience in the region. Thus, additional monitoring will be needed to validate the conditions and estimates used in this analysis.

Table 1—Characteristics of the traditional even-aged and pine-bluestem management scenarios compared in this study

	Management scenario	
Characteristic	Traditional	Pine-Bluestem
Rotation length (yr)	80	120
Stand BA (ft^2/ac)	60 ≤ pine ≤ 90 10 ≤ hdwd ≤ 15	60 ≤ pine ≤ 80 10 ≤ hdwd ≤ 15
Post-harvest residual overstory BA (ft^2/ac)	20 pine 10 hdwd	40 pine 10 hdwd
Burning interval (yr)	4	3

REFERENCES

Huebschmann, M.M. 2000. Restoring the shortleaf pine-bluestem grass ecosystem on the Ouachita National Forest: An economic evaluation. Ph.D. dissertation. Oklahoma State Univ. Stillwater, OK. 141 p.

Huebschmann, M.M.; T.B. Lynch; D.K. Lewis. 2000. Restoring the shortleaf pine-bluestem grass ecosystem on the Ouachita National Forest: An economic evaluation. Final project report to the USDA Forest Service - Southern Research Station. 51 p.

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USDA Forest Service. 1996a. Renewal of the shortleaf pine/bluestem grass ecosystem and recovery of the red-cockaded woodpecker: Final environmental impact statement for an amendment to the land and resource management plan, Ouachita National Forest. 94 p.

USDA Forest Service. 1996b. 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.