

RESTORING FOREST COMPOSITION AND STRUCTURE OF RIPARIAN CORRIDORS IN THE MISSOURI OZARKS

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ABSTRACT

Desire to restore the function of riparian forest ecosystems has become a primary objective of many land management agencies in the United States. In the eastern U.S., much emphasis has been placed on planting native hardwood tree species in former bottomland agricultural fields. These afforestation practices most often consist of planting bare-root tree seedlings of a select number of hardwood species and managing vegetation with a number of pre- and post-emergent herbicides, or planting a perennial cover-crop to control competing vegetation. However, recent efforts have often resulted in poor success. In addition, there is also interest in restoring native herbaceous plant communities and understanding the extent to which natural tree regeneration occurs. Overall, there is very little information providing successful restoration techniques in old-field riparian ecosystems. Objectives of this study were to evaluate the effects of two herbicide and three cover-crop vegetation management treatments on the 1) artificial regeneration of 13 native bottomland tree species, 2) composition of natural tree regeneration, and 3) composition, structure, and diversity of the resulting ground flora at three riparian sites in the Missouri Ozarks. Choice of tree species was the most important factor for determining afforestation success. Herbicide-only treatments had significantly greater natural tree regeneration than cover-crop treatments, and distance from the nearest intact forest edge was an important source of this variation. Composition and diversity of ground flora was strongly dependent on site characteristics. In general, the herbicide-only treatments promoted greater ground flora diversity and richness, and promoted more native bottomland species than cover-crop treatments. However, successful establishment of some cover-crops can significantly reduce the amount of exotic plant cover.