

OAK REGENERATION ACROSS A HETEROGENEOUS LANDSCAPE IN OHIO: SOME LIMITED SUCCESS AFTER THINNING, TWO FIRES, AND SEVEN YEARS

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We document an increase in oak and hickory advance regeneration, depending on landscape position, in the sixth year (2006) after mechanical thinning (2000) and repeated prescribed fires (2001 and 2005) across two sites (Raccoon Ecological Management Area and Zaleski State Forest) in southern Ohio. Each of four 20+ ha units (two controls and two thin plus burn twice) were modeled and mapped into a long-term moisture regime (integrated moisture index [IMI]) and plots were established at each of 242 points on a 50-m grid. Plots were monitored for light and vegetation in 2000, 2001, 2004, and 2006. From these data, we developed two simple models: (1) a model of oak “competitiveness,” based on advance regeneration of oaks and their competitors; and (2) a model estimating the probability of a plot’s becoming “competitive for oak” based on canopy openness, IMI class, and number of oak and hickory seedlings present. For dry or intermediate (not mesic) sites with at least 5,000 oak and hickory seedlings/ha, opening the canopy to 8.5-19 percent, followed by at least two fires, should allow oak and hickory to be “competitive” over about 50 percent of the area. Overall, these results suggest promise for partial harvesting and repeated fires as a management strategy to reverse the accelerating loss of oak dominance in the central hardwoods region.
