

MANAGEMENT, MARKETS, AND MESOPHICATION: AN EMPIRICAL EXPLORATION OF OAK FORESTS IN THE SOUTHEAST

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The contemporary ecological change occurring in historically oak dominated forests in the Eastern United States illustrates the temporal externality of ecological change driven by policy and management choices. Fire suppression policies beginning circa 1930, in tandem with selective harvest of high-value oak trees have had the unintended consequence of mesophication, i.e., proliferation of maples and beeches over oaks. This paper adapts U.S. Department of Agriculture, Forest Service, Forest Inventory and Analysis data to perform empirical analysis to 1) examine stand conditions and disturbances driving mesophication, including harvest method and fire; and 2) assess on-site characteristics (biophysical and amenities) and market signals (price) driving the choice of harvest methods in oak forests of the Southeastern United States. The empirical model showed that partial harvesting practice has a significantly strong and positive association with mesophication whereas the presence of fire has a significantly strong and negative association. Further, the random utility-based harvest choice model reveals that amenities and timber outputs have a complementary effect on partial harvests. Additionally, I quantified the average marginal willingness-to-accept partial harvesting, i.e., the marginal costs of avoided mesophication in the case study region, as \$7.42 per million board feet. Hence, estimates from this study could be used to design incentive-based programs to support oak preservation, restoration, and sustainable long-term management.