

RECONSTRUCTING THE INTERACTIONS BETWEEN *ACER RUBRUM*, *BETULA LENTA* AND *QUERCUS RUBRA* IN A MIXED-SPECIES FOREST IN CENTRAL MASSACHUSETTS: REVISITING THE EARL STEPHENS PLOT

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In 1952 Earl Stephens clearcut and meticulously reconstructed the history of a 0.36 ha plot on the Harvard Forest in Petersham, MA. It was found, and later presented in paper by Oliver and Stephens in 1977, that the forest developed from allogenic processes, rather than the continuous recruitment of shade tolerant species through autogenic processes. Since that initial study little has been done to investigate the development of the plot. The plot was revisited in the fall of 2004 to measure and inventory the species present. The data will be used to determine how the forest initiated and how the species present on the site interacted with each other after the clearing in 1952.

These interactions between northern red oak and red maple have been documented (Oliver 1977), but little has been done to try and understand the dynamics between black birch and red maple. This study focuses primarily of the relationships between these two species with and without the presence of northern red oak. Ten percent of the 0.36 ha plot was sampled; the plot was divided into the original 9.3 m² subplots from the 1952 reconstruction. Increment cores, canopy dimensions, diameter and height information were collected for each tree within the sampled subplot.

The purpose of this study is to provide information on how black birch and red maple interact with each in a mixed-species forest in central New England. Knowledge of such interactions will construct a better understanding of forest dynamics in central New England.

Literature Cited

- Oliver, C.D.; Stephens, E.P. 1977. **Reconstruction of a mixed-species forest in central New England.** Ecology. 58(3): 562-572.
- Oliver, C.D. 1977. **The ecological role and silvicultural implications of northern red oak (*Quercus rubra* L.) in mixed species stands in central New England.** Bulletin of the Yale University School of Forestry and Environmental Studies.