



National Commission on Science for Sustainable Forestry

Project B1.1: Reconciling the Effects of Historic Land Use and Disturbance in Managed Forests of the Northeastern United States

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In the northeastern United States, nearly all lands have been impacted by European settlers and their followers since the 1600s. Settlers modified the landscape through clearing, plowing, grazing, logging, abandoning, developing, and fragmenting what was once nearly contiguous forest. Our study is designed to 1) determine the composition, dynamics, and natural disturbance regimes of presettlement forest communities in the northeast, 2) describe the changes and biodiversity impacts imposed on the landscape by human land use over the past 400 years, and 3) offer realistic suggestions for sustainable forest management that could simulate presettlement ecological processes while supplying economic resources, thus favoring natural species assemblages and promoting long-term conservation of biodiversity in managed forests.

The study area, the “northeastern United States” includes Ecoregions 221 and M212 northeast of New York, Pennsylvania, and New Jersey, as well as ecoregion 212. Four forest types have been defined within this area based on a review of literature: 1) northern hardwoods, 2) transition hardwoods, 3) central hardwoods, and 4) pine barrens. A fifth type that occurs at high latitudes and elevations, spruce-fir, is not included in the study. An extensive literature review of over 200 references determined that each forest type had a unique presettlement species composition and structure that responded to a suite of natural disturbances and their effects. In contrast, historic land uses such as agricultural abandonment have homogenized forest composition and structure across the northeastern landscape. Therefore we used specific data on the frequency and intensity of natural disturbance and the likely composition and age structure of natural vegetation to formulate specific management guidelines for each forest zone. These guidelines were constrained by the legacy of former land use on the current landscape, as well as effects of current ownership patterns, fragmentation, and the economic feasibility of mimicking natural forest composition and dynamics with silviculture.

Deliverables for our project include:

- 1) A final report, consisting of four major sections, each detailing presettlement, postsettlement, and suggested management for each of the four forest types.
- 2) A shortened version of our final NCSSF report in the *Journal of Forestry*, covering all four forest types.
- 3) Two outreach publications in conjunction with the University of New Hampshire Cooperative Extension. These documents, outlining our findings for northern hardwoods and transition hardwoods, will be short (~5 pages), well illustrated, and geared to forest managers. We will also make them available to other states’ cooperative extension offices upon completion of the project.
- 4) Poster presentations at regional conferences, including The Wildlife Society and the New England Society of American Foresters.
- 5) A website to make our findings available to landowners, managers, and the general public. Available at www.unh.edu/ncssf, it will include all of the information from our final report in a user-friendly and logical layout that includes a clickable map of the northeast, plus downloadable resources such as our conference posters, extension publications, a full bibliography, and links to various organizations.