

National Commission on Science for Sustainable Forestry

PROJECT 7 B1.1

Land Use History Impact on Biodiversity – Implications for Management Strategies in the Northeastern United States

Investigators: John Litvaitis, Thomas Lee, Mark Ducey, and Lauren Howard

Progress Report – February 2004

I. Status of the project effort relative to the NCSSF Statement of Work

A. Literature has been compiled relative to the two major themes of the project: 1) a comparison of presettlement vegetation with current forest conditions, and 2) identification of silvicultural techniques to restore a range of forest habitats. The primary researcher, Dr. Lauren Howard, is reviewing references from the four general forest types identified in the northeastern ecoregions: Northern Hardwoods, Transition Hardwoods, Central Hardwoods, and Pine Barrens.

B. A project website is under construction and will be available at <http://www.unh.edu/NCSSF/>. The site will include an overview of the project and information on patterns of natural disturbance, land-use history, and existing and potential silvicultural practices (by forest type). We envision that the development of this site will take several months to complete.

C. Drs. Litvaitis and Howard met with representatives of the University of New Hampshire Cooperative Extension on December 1, 2003 to explain this project and assess the possibility of working with Cooperative Extension on several outreach efforts. We envision at least one extension publication and participation in one or more workshops once the project is complete.

D. Dr. Litvaitis presented a poster at the annual meeting of The Wildlife Society (abstract below). Currently, we are preparing a second poster that Dr. Howard will present at the New England Society of American Foresters winter conference in Quebec during March (abstract below).

II. Challenges and issues that have arisen in the project and solutions

We now realize that the original geographical/ecological area to be covered (Ecoregions 221 and M212) is too vast, extending out of what has been termed “the Northeast” in ecological literature. Secondly, focusing on these two ecoregions also ignores adjacent or embedded sections of Maine, Vermont, New York, and Pennsylvania that are similar in vegetation to ecoregions 221 and M212. As a result, we have redefined our scope to include only the areas of

Ecoregions 221 and M212 that are northeast of New York, Pennsylvania, and New Jersey. We also added Ecoregion 212 to give more complete coverage of the Northeast.

III. Outlook for timely and successful completion

We intend to present our report at the NCSSF meeting in Boulder, Colorado on June 3, 2004. Coordination for publication with UNH Cooperative Extension and the Journal of Forestry will likely be after this date.

IV. Poster abstracts

**POSTER PRESENTATION AT ANNUAL MEETING OF THE WILDLIFE
SOCIETY
Burlington, VT
September 8, 2003**

Early-successional habitats in the northeastern United States: should historical prevalence guide contemporary management? John A. Litvaitis, Department of Natural Resources, University of New Hampshire, Durham, NH 03824

Abstract: In the northeastern United States, populations of many species affiliated with native shrublands and regenerating forests, collectively referred to as thickets, are declining rapidly. Efforts to maintain adequate amounts of thicket habitat via timber harvests are confronted by a range of contemporary land uses, a legacy of historic uses, and public opposition. At the same time, there is increasing support for timber harvesting methods that mimic natural disturbance regimes. Such an approach includes small, scattered patch cuts or single tree harvests. Unfortunately, this approach is hampered by traits that characterize forests in the region, including ownership parcelization, landscape fragmentation, and a relatively young forest. Moderate to large, clustered harvests may be a more practical approach for providing early-successional habitats, especially in developed landscapes. Although this approach may deviate from the known range of natural variability, it may prove more successful in sustaining the regional pool of species that are dependent on thicket habitats. In more rural areas, silvicultural manipulations could be applied on a sliding scale relative to forest age, and begin to mimic natural disturbances as forest mature. Addressing the needs of plant and animal species that require thicket habitats in the northeastern United States will require creativity, a willingness to explore a variety of solutions, and public support.

**POSTER PRESENTATION AT THE WINTER MEETING OF THE
NEW ENGLAND SOCIETY OF AMERICAN FORESTERS
Quebec City, P.Q.
March 23-28, 2004**

Land use history impact on biodiversity – implications for management strategies in the northeastern United States Lauren F. Howard, John A. Litvaitis, Thomas D. Lee, and Mark J. Ducey, Department of Natural Resources, University of New Hampshire, Durham, NH, 03824

Abstract: At the time of European colonization, forests covered the majority of the northeastern United States. By the mid-1800s, 60-80% of forests in the Northeast had been cleared for agriculture. Agricultural interests shifted to the Midwest and by the late 1800s, large tracts of cleared land were abandoned and allowed to return to forest. As a result, forests that currently dominate the region are homogeneous, young to middle aged, fragmented, and parceled into small units of ownership. Clearly, these forests lack important habitat elements (e.g., large diameter trees, canopy gaps, and coarse woody debris). Left idle, it may take a century or more for such forests to mature and develop the structural complexity and diverse age distributions they currently lack. To address these concerns, we are conducting an extensive review of the natural history of forests in the Northeast and summarizing the natural disturbance regimes that historically affected this region. Our goal is to identify silvicultural techniques that may be useful to restore a range of forest habitats by mimicking natural disturbances. At the same time, we also recognize that it is unlikely that true presettlement conditions can be restored in many areas due to past (and ongoing) human effects. Short of setting an unattainable goal for management, however, we believe that it may be both ecologically and economically possible to recreate some of the structural and compositional characteristics of presettlement forests, using known techniques from sustainable forestry, and thus contribute to the maintenance of native biodiversity throughout the region.