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Perceptions of the Great Northern Forest & its Management

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What is the issue?

Succession is the ecological process in which one kind of plant community naturally replaces another one over time. Early successional forests have lots of trees that are small in height and thickness, and are made up of shrubs and trees that need lots of sun. Other kinds of trees that don't require as much sun grow in over time, eventually leading to an older forest made up of long-living tree species that grow tall and thick. Some wildlife and plant species require either early or later successional forests. A very few species require both. The amount and distribution of successional stages across the landscape is important - depending on the species.

Historically, natural disturbances sustained small- and large-scale patches of various cover types and successional stages throughout the 26 million acre Great Northern Forest (GNF) stretching from northern New York State, through Vermont, New Hampshire, and Maine. These forest conditions varied over time in response to a variety of natural factors (e.g., wildfires, wind events, beaver-initiated flooding) as well as alteration by Native Americans and later European settlers. The practical effect of these patterns was high habitat and biological diversity across the landscape. In recent decades, however, early-successional habitats within the GNF have been decreasing.

Given these changes in forest conditions, active forest management is an important tool for sustaining both forest-habitat diversity and wildlife diversity in the GNF. Presumably, limited understanding by the public about the ecological role of forest management has led many to oppose active forest management practices, particularly those involving even-aged or commercial treatments. These societal biases put conservation practitioners in the unenviable position of promoting socially unpopular, yet ecologically necessary, forest management treatments to meet legal and ethical mandates related to the preservation of biological diversity. We recently surveyed residents within the GNF to understand their awareness, beliefs, and attitudes toward the GNF, early-successional (i.e., <20 years old) and late-successional (i.e., >100 years old) habitats, active management to restore and sustain early-successional habitats (ESH).



Data and Methods

In 2005, we conducted a mail survey of 5,000 randomly selected households, equally divided among the four states, and further stratified equally among rural and non-rural towns (as defined by the U.S. Census Bureau). Each of these eight substrata contained a sample of 625 households. To ensure respondents shared the same understanding of the GNF, we provided key definitions (i.e., Great Northern Forest, early-successional, late-successional) in the mail questionnaire and as a verbal pre-cursor in a telephone follow-up with 100 non-respondents to the mail survey who we contacted to assess possible nonresponse bias.

What are Residents' Attitudes and Beliefs about GNF and its Management?

Respondents to the mail survey and nonrespondents contacted by telephone were remarkably similar in terms of their attitudes and beliefs. Further, we found no differences between respondents from any of the four states, or, surprisingly, between rural and non-rural residents. Analysis of social and demographic characteristics of the respondents revealed that we had contacted a broad cross-section of the public in terms of age, gender, population size of resident area, and education level.

Residents had positive attitudes toward both early- and late-successional stages of the GNF, although their attitudes toward late stages were even more positive than toward early stages. Overall, 51% of respondents had the same attitude toward both stages, 37% had a more positive attitude toward late-successional stages, and 12% were more positive toward early stages. We found no differences between rural and non-rural respondents for either stage. Further, both rural and non-rural residents had a positive attitude toward use of timber management to sustain early-successional stages, and non-rural residents were even more positive than rural residents toward use of timber management.

GNF residents' attitudes about the different successional stages are influenced by both cognitive beliefs (what they know and think about) and affective beliefs (their feelings). In this case, residents' knowledge about successional stages

and their characteristics in the GNF was low; rural residents averaged 3.0 correct responses out of six questions, and non-rural residents averaged 2.8 correct. A majority of respondents knew that the natural state of the GNF contains a diversity of successional stages. However, we uncovered a misperception that maturing forests with little early-successional habitat have more overall diversity compared to those also containing early-successional stages. We also identified the misperception by at least one-quarter of respondents that maturing forests with little early-successional habitat are closer to a natural state for the GNF than are forests with a mix of successional stages. In addition to gaining an understanding of GNF residents' ecological knowledge, we determined that GNF residents' cognitive beliefs about the kinds of benefits the GNF provides in their lives. In general, more residents reported experiencing intangible benefits (e.g., viewing scenery, observing animals and plants, spiritual renewal) compared to tangible benefits (e.g., hunting, sale of timber or firewood for income).

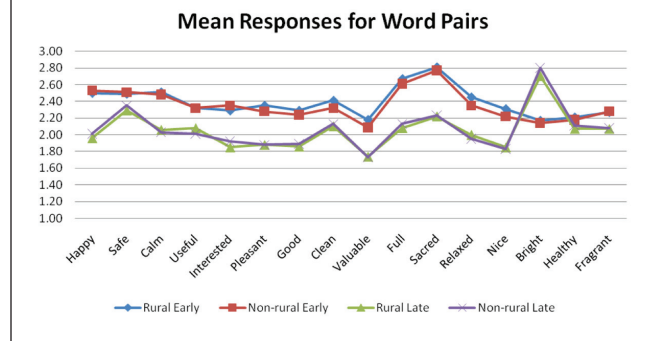
Residents' attitudes toward early- and late-successional stages were also influenced by their affective beliefs or feelings about those stages. Both rural and non-rural residents had even more positive feelings toward late-successional stages compared to early-successional stages. Using factor analysis, we identified four underlying components to respondents' feelings. These four components were similar for both early- and late-successional stages of the GNF. A utility component identified positive feelings of usefulness and value (e.g., useful, valuable, good, happy). A healthfulness component expressed positive feelings about feeling healthy and vibrant (e.g., healthy, bright, clean). A fear and loathing component indicated negative feelings of fear and perhaps aloneness with both successional stages (e.g., scared, empty, disgusted, tense, or agitated). A spiritual or non-spiritual component reflected feelings that the GNF was either a "sacred" or "everyday" kind of place, with sacred, fragrant, and relaxed being associated with late-successional stages, and mundane and bored associated with early-successional stages.

Discussion and Policy Implications

GNF residents seem to have more positive attitudes towards the use of timber management to sustain early-successional stages of forest than does the American public in general. The positive attitudes toward timber management shown in our study may have resulted from our explicit linkage of timber management to a favorable purpose – sustaining early-successional stages of the forest – indicating that the context within which timber management is viewed might affect attitudes toward it.

We found remarkable consistency between rural and non-rural respondents (and among states) for the various kinds of beliefs and attitudes we assessed, unlike rural-urban differences

Figure 1: Mean responses for rural vs. nonrural residents of the Great Northern Forest, for word pairs used to assess affective beliefs toward early- and late-successional forest stages.



SOURCE: Human Dimensions Research Unit, Cornell University, 2005 mail survey.

reported in other studies. One reason for this consistency might be the greater specificity with which we framed our questions, compared to the broader, more nebulous ecosystem management terms used in other studies. We framed our questions in terms of clearly defined successional stages of the GNF. Then we assessed beliefs and attitudes in terms of how those stages fit into the broader ecosystem and the important aspects of ecosystem management: (1) managing for a broad range of products and services, (2) large geographic scales, and (3) long temporal scales.

Any educational programs developed in an effort to improve residents' attitudes toward active forest management, in particular, likely would be most successful if they emphasize that sustaining early-successional stages of the GNF is necessary to provide the services and products that people desire (e.g., aesthetic beauty, wildlife observation, etc.). Messages that are most likely to resonate are those highlighting a combination of utilitarian and amenity values. Residents of the GNF seem to hold dear the practical utility of the forest as well as its substantial aesthetic beauty. Even if residents' specific ecological knowledge is relatively low, they understand the GNF's ecological importance.

One way to overcome misperceptions associated with residents' relatively low ecological knowledge may be to communicate that the benefit-to-cost ratio of actively sustaining early-successional stages is higher than residents perceive it to be. Success may require differentiating between planned, active management to sustain early-successional habitats and the various benefits associated with that stage, and random forest fragmentation from development and "bad management" which undoubtedly diminishes the benefits they currently experience.

