Project Impacts

Factors Affecting Sugar Maple Regeneration Across the Northern Forest

NSRC

Northeastern States Research Cooperative

PROJECT AWARD YEAR AND TITLE:
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Identifying Factors Affecting Regional Patterns of Sugar Maple Regeneration in the Northern Forest

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Sugar maple is an economically, ecologically, and socially valuable component of the northern hardwood forests in the northeastern United States. However, small-scale studies throughout the region suggest sugar maple reproduction may be in extreme decline. Research across the range of sugar maple attributes this regeneration failure to deer browsing, competition from American beech, sensitivity to soil moisture and temperature, increased site acidification, and imbalances in soil nutrients.

NSRC researchers are identifying the importance of these climatic and site specific drivers, including stand management histories, on dynamics of sugar maple regeneration across a gradient of stands and sites throughout the Northern Forest. Researchers compiled data from the USDA Forest Service Forest Inventory and Analysis, the Vermont Monitoring Cooperative's North American Maple Project, and Oak Ridge National Laboratory's climate summaries and from on the ground forest measurements. They determined, to date, that the most important variable for predicting sugar maple regeneration across the region is presence of other seedlings which likely reflects the importance of canopy disturbance and creation of openings to stimulate regeneration. Other important variables include stand management history and beech density and size.

Continued work will integrate climate and soil factors and more detail on forest stand management practices. Researchers will provide forest managers and landowners with updated guidelines for securing successful sugar maple regeneration across the range of Northern Forest climatic and site conditions.