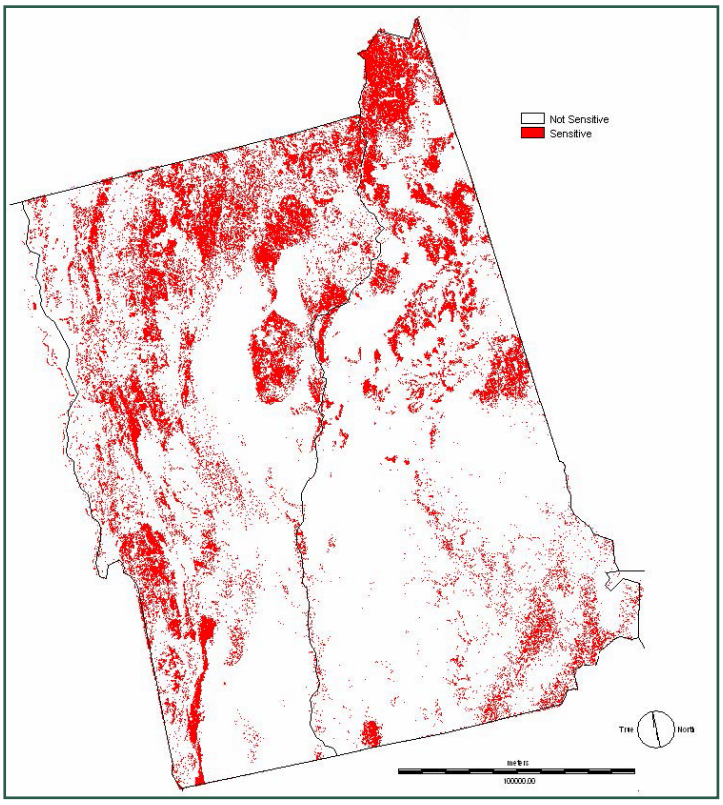
Project Impacts

NSRC-FUNDED RESEARCH FINAL REPORT

Mapping Forest Sensitivity to Sulfur and Nitrogen Deposition in Northeastern North America



Forested areas of Vermont and New Hampshire that are sensitive to the negative effects of combined atmospheric sulfur and nitrogen deposition.

PROJECT AWARD YEAR AND TITLE:
2001 & 2003
Assessing Forest Sensitivity to Sulfur and Nitrogen Deposition for Northeastern North American Forests: Regional Mapping

PRINCIPAL INVESTIGATOR:
Eric Miller
Ecosystems Research Group, Ltd., VT
ekmiller@ecosystems-research.com

COLLABORATORS:
Julian Aherne Trent University, ON
Paul Arp University of New Brunswick
Bill Breckenridge Eastern Canadian Premiers
Ian DeMerchant Natural Resources Canada
Natasha Duarte USDA Forest Service, VT
Guy Fenech Environment Canada
Heather Morrison Environment Canada
Rock Ouimet Forestry Quebec
Linda Pardo USDA Forest Service, VT
Shaun Watmough Trent University, ON
Sandra Wilmot VT Agency of Natural Resources

Although sulfur emissions have decreased as a result of sulfur dioxide control programs, projected emissions of acidifying sulfur and nitrogen compounds are expected to continue impacting forests. These emissions present long-term threats to forest health and productivity in northeastern North America. Excess sulfur and nitrogen deposition may reduce the supply of nutrients available for plant growth. Nutrient depletion increases susceptibility of forests to climate, pest, and pathogen stress which reduces forest health and timber yield and eventually changes forest species composition.

The Joint Conference of the New England Governors and Eastern Canadian Premiers called for a Forest Mapping Working Group to assess sensitivity of northeastern North American forests to current and projected sulfur and nitrogen emissions levels. NSRC researchers identified and mapped forested areas most sensitive to continued sulfur and nitrogen deposition in Vermont, New Hampshire, Maine, and Newfoundland.

Findings show that current levels of sulfur and nitrogen deposition create conditions for nutrient depletion in 30% of upland forests in Vermont, 18% in New Hampshire, 36% in Maine, and 23% in Newfoundland. Researchers estimated that a 50% reduction in combined sulfur and nitrogen deposition would remediate nutrient depletion in 58% of sensitive forest areas in Vermont, 76% in New Hampshire, 52% in Maine, and 68% in Newfoundland.

Funding support for this project was provided by the Northeastern States Research Cooperative (NSRC), a partnership of Northern Forest states (New Hampshire, Vermont, Maine, and New York), in coordination with the USDA Forest Service, an equal opportunity provider.