



# **Center for Research on Sustainable Forests 2008-2009 Annual Report**

**T**hanks to all our supporters, researchers, and other stakeholders for a great third year for the Center for Research on Sustainable Forests! This year has seen a continuing of some key programs as well as the exploration of some new projects and programs. As always, we have worked closely with the Cooperative Forestry Research Unit and the School of Forest Resources, and with countless other interested parties who all contribute to our Center! We're looking forward to continuing the important work done behind the scenes to keep our forests healthy and productive, as well as the public outreach that is so vital in sustainability programs.



## Faculty & Staff

G. Bruce Wiersma, Director  
Robert G. Wagner, CFRU Director  
Spencer R. Meyer, CFRU Associate Director  
Summer E. Allen, Communications & Development  
Coordinator  
Erin Simons, Assistant Scientist (Spatial Analysis of Forest  
Wildlife Habitat)  
Kasey Legaard, Associate Scientist (Forest Remote Sensing)  
Alex Elvir, Visiting Fellow (Summer 2008)  
Rosanna Libby, CFRU Administrative Assistant  
Matt Russell, CFRU Data Manager  
Matt Olson, CFRU Post-Doc Researcher



## Graduate Students

Dina Alberto, Master of Forestry (August 2009)  
Elizabeth Lewis, M.S. Forest Resources (Expected  
graduation May 2010)

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## Cooperating Faculty & Staff

- Aria Amirbahman, Associate Professor of Civil & Environmental Engineering
- Kathleen P. Bell, Associate Professor of Resource Economics & Policy
- Jeffrey Benjamin, Assistant Professor of Forest Operations
- Thomas Brann, Professor of Forest Resources
- Aram Calhoun, Associate Professor of Wetlands Ecology
- Christopher Cronan, Professor of Biology & Ecology
- David Correia, Assistant Professor of Geography
- John Daigle, Associate Professor of Forest Recreation Management
- Michael Day, Associate Scientist in Ecosystem Science
- Ivan J. Fernandez, Professor of Soil Science
- Douglas Gardner, Associate Professor of Wood Science & Technology
- Barry Goodell, Professor of Wood Science & Technology
- Michael Greenwood, Professor of Tree Physiology
- Daniel Harrison, Professor of Wildlife Ecology
- Malcolm L. Hunter, Jr., Professor of Conservation Biology & Wildlife Ecology
- Richard Jagels, Professor of Forest Biology
- Jody Jellison, Professor of Molecular Plant Pathology
- Richard W. Judd, Professor of Environmental History
- Laura S. Kenefic, Faculty Associate & Researcher of Silviculture
- Alan J. Kimball, Associate Professor of Forest Resources
- William B. Krohn, Professor of Wildlife Ecology
- Melissa Laser, Cooperating Researcher of Marine Science
- Jessica Leahy, Assistant Professor of Parks, Recreation & Tourism
- Robert J. Lilieholm, Associate Professor of Forest Policy
- William H. Livingston, Associate Professor of Forest Resources
- Cynthia S. Loftin, Associate Professor of Wildlife Ecology
- Stephen A. Norton, Professor of Geological Sciences
- Terry Porter, Assistant Professor of Management
- Robert Rice, Professor of Wood Science
- Steven A. Sader, Professor of Forest Resources
- Robert S. Seymour, Professor of Forest Resources
- Mario Teisl, Professor of Resource Economics & Policy
- Alan S. White, Professor of Forest Ecology
- Jeremy Wilson, Assistant Professor of Forest Management

## **Presentations, Publications, Workshops, & Events:**

Bethers, S., M.E. Day, G. B. Wiersma, I.J. Fernandez and J.A. Elvir. 2008. Effects of chronically elevated nitrogen and sulfur deposition on sugar maple saplings, nutrition growth and photosynthetic physiology. *Journal of Forest Management and Ecology*. Accepted.

CRSF, Sponsor, Eastern CANUSA Forest Science Conference, University of Maine, October 17-18, 2008.

CRSF, Sponsor, Climate Change 21: Choices for the 21st Century: An Interactive Forum & Environmental Festival. University of Maine, October 23-24, 2008.

Legaard, K., Simons, E., and S. Sader. 2008. Integration of remote sensing and GIS to quantify forest landscape change in support of wildlife habitat modeling. Presented at the Society of American Foresters National Convention, Reno, Nevada.

Legaard, K., Simons, E., and S. Sader. 2008. Integration of remote sensing and land cover data to evaluate forest landscape change. Presented at the Eastern CANUSA Forest Science Conference, Orono, Maine.

Legaard, K.R. 2009. Using satellite imagery to evaluate changes in timber harvest patterns and forest landscape structure, 1973-2007. Invited presentation given to the Maine Chapter of The Nature Conservancy, Brunswick, Maine.

Sader, S. and K. Legaard, Maine Image Analysis Laboratory. "Forest Cover Change Map of Maine." Map produced with support of CRSF's ForCAST project, January 2009.

Sader, S., and K. Legaard. 2008. Forest harvest, composition, and biodiversity trends on easements and changing ownerships. Presented at the Society of American Foresters National Convention, Reno, Nevada.

Simons, E.M., Harrison, D.J., Krohn, W.B., Legaard, K.R., Wilson, J.S., and S.A. Sader. 2009. Past and future trends in habitat supply for martens and lynx across the landscapes of northern Maine. Invited presentation at the New England Society of American Foresters Winter Meeting, Portland, Maine.

Simons, E.M. and K.R. Legaard (Co-presenters). 2008. Evaluating broad-scale changes in timber harvesting patterns, forest landscape structure, and wildlife habitat supply for umbrella species in northern Maine. Invited presentation at Friends of ForCAST, Center for Research on Sustainable Forests, Orono, Maine.

Simons, E.M., Harrison, D.J., Krohn, W.B., Legaard, K.R., and S.A. Sader. 2008. Retrospective changes in habitat supply for Canada lynx and snowshoe hares resulting from timber harvesting: Implications for lynx recovery? Presented at The Wildlife Society Annual Conference, Miami, Florida.

Simons, E. M., J. S. Wilson, D. J. Harrison, and W. B. Krohn. Predicting responses of forest landscape change on wildlife umbrella species: Future projections results for Canada lynx and American martens. Presentation to Advisory Committee, Maine Cooperative Forestry Research Unit, Bangor, Maine. April 15, 2009.

Simons, E. M., D. J. Harrison, W. B. Krohn, K. R. Legaard and S. A. Sader. Ecological factors associated with landscape-scale occurrences of Canada lynx in northern Maine. Invited presentation at Lynx on the landscape: What you need to know, workshop and field tour, Maine Cooperative Forestry Research Unit, Greenville, Maine. October 29, 2008.

Simons, E. M. Applying landscape principles to stand management for Canada lynx. Invited presentation at Lynx on the landscape: What you need to know, workshop and field tour, Maine Cooperative Forestry Research Unit, Greenville, Maine. October 29, 2008.

Wiersma, G.B. Moderator, "The Impact of Climate Change on Our Environment", Climate Change 21: Choices for the 21st Century: An Interactive Forum & Environmental Festival. University of Maine, October 23, 2008.

Wiersma, G.B. "Maine ForCAST Initiative: Forecasting Maine's Future Forest", presented to Friends of ForCAST stakeholders group, University of Maine, November 20, 2008.

Wilson, J. S. and E. M. Simons. Crossing boundaries: Building a forest model for 14 contiguous townships in northern Maine. Eastern CANUSA Forest Science Conference, Orono, Maine. October 17, 2008.

## Northeastern States Research Cooperative (NSRC)

[www.nsrcforest.org](http://www.nsrcforest.org)

This is the fourth year that the University of Maine has received funding for the NSRC, a research cooperative between the US Forest Service and the participating states of Maine, New Hampshire, Vermont, and New York. An RFP is released jointly and each state coordinates their own peer-reviewed process on an individual theme. This year, Maine's Theme (Forest Productivity & Products) funded five new projects for one of two total years, and reallocated funds for the second year of three projects that were approved in the 2008 funding cycle.

The NSRC has vastly improved the design and availability of the shared website in the past few years, and it is a great resource. For specific information on awards, or general information on the NSRC, please visit the website.

**The Northern Forest**

**The Northeastern States Research Cooperative**

*A partnership between Maine, New Hampshire, Vermont, New York and the USDA Forest Service for research to benefit Northern Forest lands and communities.*

4 states  
26 million acres  
1 million residents

THE UNIVERSITY OF MAINE  
A Member of the University of Maine System

Center for Research on Sustainable Forests  
[www.crsf.umaine.edu](http://www.crsf.umaine.edu)  
(207) 581.3794

## **Keeping Maine's Forests (KMF)**

Keeping Maine's Forests is a study group formed in early 2008 at the request of the Governor's Office, with a specific inquiry into how rising land values, increasing populations, and global economics will affect the future of Maine's forests. The objective is to assess problems facing the Maine forests and then to come up with a series of proposed solutions to help maintain the integrity of the forest resource. This study group has met every six to eight weeks since February 2008 and has been focusing on information gathering. We were awarded a grant from the Natural Resources Conservation Service to assist us with this project as well as some other projects within the CRSF. A series of recommendations has been suggested by the group and we are currently in the final stages of editing. A final report is expected to be submitted to the Governor's Office by Fall 2009.

## **Forests for Maine's Future**

[www.forestsformainesfuture.org](http://www.forestsformainesfuture.org)

Forests for Maine's future, a partnership of the CRSF, the Maine Forest Service, the Maine TREE Foundation, and the Small Woodland Owners' Association of Maine (SWOAM) continues to be the major outreach component of the CRSF. Our writer, Andy Kekacs, has continued to author a newsletter titled "Fresh from the Woods," which is sent out electronically to a large distribution list and posted on the FMF website as well. Andy has also been able to have his articles placed in several weekly and daily papers throughout the state.

Currently the FMF partners are planning their third annual public forestry event, to be held in Portland, ME on September 19, 2009. This year's event, the "Wonder of Wood" aims to double attendance from the previous year and provide Maine residents with a free, family-friendly day of entertainment, workshops, and informational displays. The group has signed a contract with Green Tree Event Consultants of Portland to provide the logistical, sales, and marketing services of the event, as well as day-of staffing support.



### **Cooperative Forestry Research Unit (CFRU)**

[www.umaine.edu/cfru](http://www.umaine.edu/cfru)

The CFRU falls within the CRSF, but it files all its own annual reports. Check with Spencer Meyer, Research & Communications Coordinator, for more information.



## **ForCAST**

A research concept that evolved from a workshop on long-term monitoring that was held in our first year, ForCAST is a cross-disciplinary research and communications effort of the CRSF. Over the past year, two research scientists and several graduate and undergraduate students have been specifically working on projects that are integral to ForCAST. Several faculty and staff directly or peripherally contribute to the project.

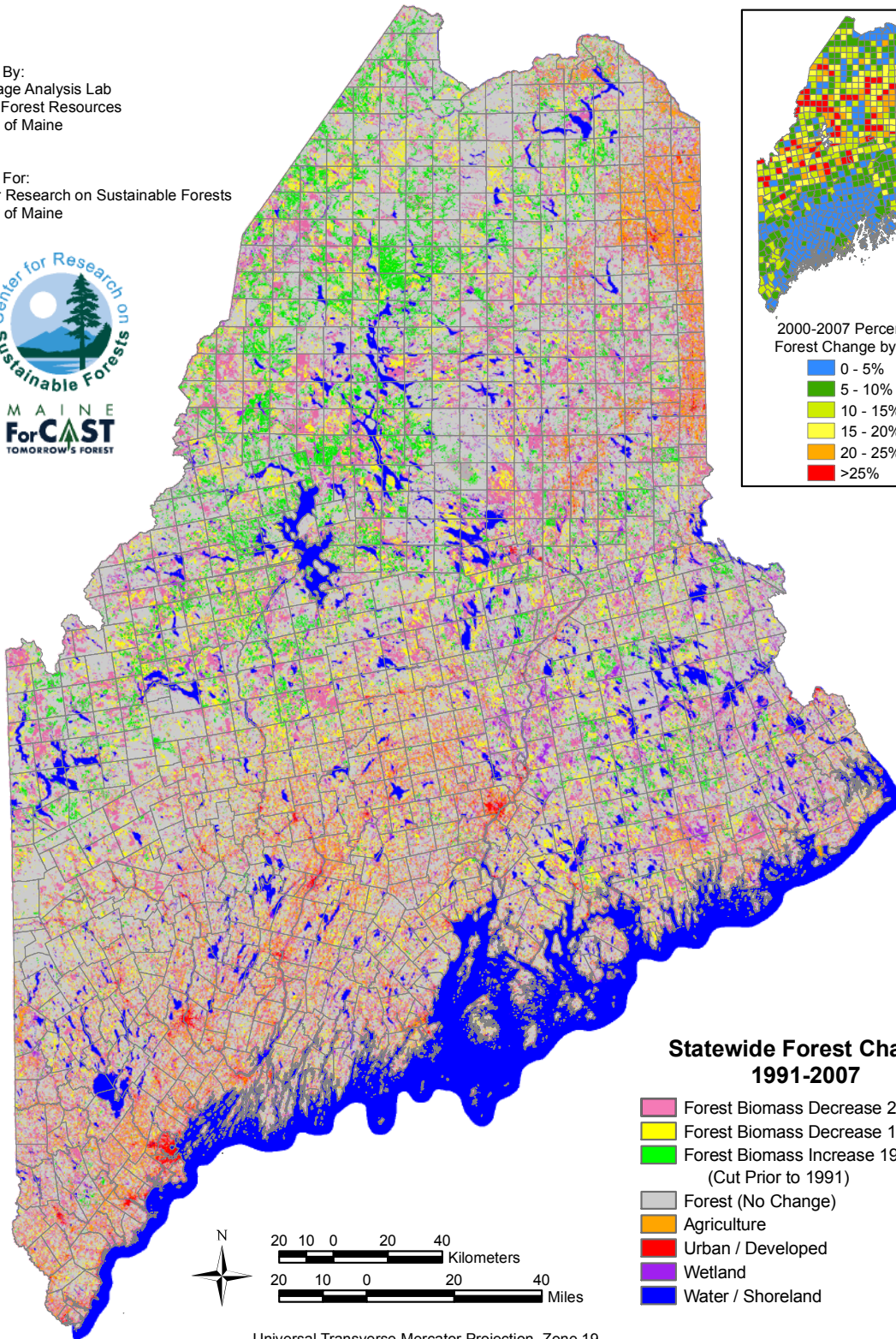
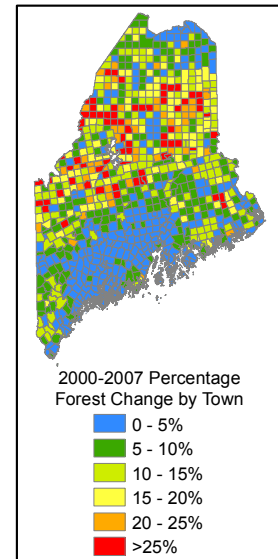
In November 2008 ForCAST hosted its first stakeholder seminar to up-date our funders and partners on the two major projects being carried out (wildlife habitat analysis and forest cover change). The coordinated presentation by ForCAST post-doctoral researcher Dr. Erin Simons and Associate Scientist Kasey Legaard was entitled “Evaluating broad-scale changes in timber harvesting patterns, forest landscape structure, and wildlife habitat supply for umbrella species in Northern Maine.”

The first major deliverable from the ForCAST group was completed in early 2009. The Forest Cover Change map of Maine is the result of ForCAST team members Kasey Legaard and Dr. Steve Sader, both of the Maine Image Analysis Lab (MIAL). Years of work at MIAL on remote sensing and change detection technology has culminated in ForCAST’s ability to show a forest change time series and begin to develop our future modeling efforts. This map and the under-lying data will serve as the foundation for relating many forest-related metrics to temporal change and will allow the ForCAST team to be able to predict developments of many metrics, including wildlife habitat dynamics, wood supply analysis, land ownership patterns, spruce budworm vulnerability, and climate change related forest dynamics.

# Maine Forest Cover Change, 1991 - 2007

Produced By:  
 Maine Image Analysis Lab  
 School of Forest Resources  
 University of Maine  
 Orono

Produced For:  
 Center for Research on Sustainable Forests  
 University of Maine  
 Orono



## Statewide Forest Change 1991-2007

- Forest Biomass Decrease 2000-2007
- Forest Biomass Decrease 1991-2000
- Forest Biomass Increase 1991-2000 (Cut Prior to 1991)
- Forest (No Change)
- Agriculture
- Urban / Developed
- Wetland
- Water / Shoreland



Universal Transverse Mercator Projection, Zone 19  
 North American Datum 1983, GRS 1980

Map Produced February 2009

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