



# CRSF



## 2006-2007 ANNUAL REPORT

The Center for Research on Sustainable Forests (CRSF) was founded on July 1, 2006. The Center brings together all University of Maine researchers working in the interdisciplinary areas of forest sustainability.

Currently, we have 31 [Cooperating Faculty](#) members throughout the University. The Center also aims to be a resource for the public regarding Maine forest research and the sustainability of our state's forests.

There are four components of the CRSF, and one new project beginning soon.

### NORTHEASTERN STATES RESEARCH COOPERATIVE

The NSRC is a competitive research grants program that funds research on ecosystems, economic and community development, forest productivity, and conservation efforts to benefit the Northern Forest, which spans 26 million acres across Maine, New Hampshire, Vermont, and New York. Each state has a separate research theme. Maine's is forest productivity and products.

### FORESTS FOR MAINE'S FUTURE

Representatives from the CRSF, the Maine Forest Service, the Small Woodland Owners Association of Maine, and the Maine TREE Foundation make up this group and work to promote greater public awareness of Maine's forests.

### COOPERATIVE FORESTRY RESEARCH UNIT

A trusted partnership between the University of Maine and the state's forest landowners, the CFRU conducts applied scientific research that contributes to the sustainable management of Maine's forests. Now 30 years old, the CFRU is composed of more than 25 private and public forest land management organizations.

### MUNSUNGAN WORKSHOP SERIES

The Munsungan Fund is an endowment that is intended to fund meetings and other events about forest research. The CRSF has revived the use of the Munsungan Fund to sponsor meeting and workshops and seminars on forest sciences and related policy.



## FACULTY & STAFF

### CRSF

G. Bruce Wiersma, Founding Director

Stephen D. Reiling, Assistant Director

Alex Elvir, Visiting Fellow, Escuela Nacional de Ciencias Forestales, Honduras

Summer E. Allen, Administrative Assistant

### CFRU

Robert G. Wagner, Director

Spencer R. Meyer, Research & Communications Coordinator

Dana Smith, Administrative Assistant

## COOPERATING FACULTY

Aria Amirbahman	Civil & Environmental Engineering
Kathleen P. Bell	Resource Economics & Policy
Jeff Benjamin	School of Forest Resources
Thomas Brann	School of Forest Resources
Aram Calhoun	Plant, Soil, & Environmental Sciences
Christopher Cronan	Biological Sciences
John Daigle	School of Forest Resources
D. Bryan Dail	Plant, Soil, & Environmental Sciences
Mike Day	School of Forest Resources
Ivan J. Fernandez	Plant, Soil, & Environmental Sciences
Douglas Gardner	School of Forest Resources
Barry Goodell	School of Forest Resources
Michael Greenwood	School of Forest Resources
Dan Harrison	Wildlife Ecology
Malcolm Hunter, Jr.	Wildlife Ecology
George Jacobson, Jr.	Biological Sciences
Richard Jagels	School of Forest Resources
Jody Jellison	Biological Sciences
Laura Kenefic	School of Forest Resources/USDA Forest Service
Alan Kimball	School of Forest Resources
William Krohn	Wildlife Ecology/US Geological Survey
Jessica Leahy	School of Forest Resources
Rob Lilieholm	School of Forest Resources
William Livingston	School of Forest Resources
Cynthia Loftin	Wildlife Ecology/US Geological Survey
Steve Norton	Earth Sciences
Robert Rice	School of Forest Resources
Steve Sader	School of Forest Resources
Robert Seymour	School of Forest Resources
Mario Teisl	Resource Economics & Policy
Alan White	School of Forest Resources
Jeremy Wilson	School of Forest Resources

## GRADUATE STUDENTS

Peter Kenlan	M.S. December 2006	Forestry
Suzanne Bethers	M.S. expected August 2007	Ecology & Environmental Sciences
Kevin Doran	Ph.D. (current)	Forest Resources

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## PUBLICATIONS

Elvir, J.A., G. B. Wiersma, M. Greenwood, M. Day, and I. Fernandez. 2006. Effects of enhanced nitrogen deposition on foliar chemistry and physiological processes of forest trees at Bear Brook Watershed in Maine. *Forest Ecology and Management* 221 (1-3) p. 207-214.

Meyer, S.R; R. Wagner; J. Witham; S. Norton; I. Fernandez; G.B. Wiersma; E. Small; J. Wilson; and A. Kimball. 2006. Long-term forest ecosystem studies of the Cooperative Forestry Research Unit and the University of Maine. *Long-term silvicultural and ecological studies: results for science and management*. Irland, Camp, Brissette, and Donohew, eds. Yale GISF, Res. Paper 005. 245 pp.

Wiersma, G.B., J.A. Elvir, and J.D. Eckhoff. 2006. Forest vegetation monitoring and foliar chemistry of red spruce and red maple at Acadia National Park in Maine. *Environmental Monitoring and Assessment*. S. Kahl & S. Nelson, guest editors. Volume 126-2007. p. 9-25.

Osher, L.J.; L. LeClerc, G.B. Wiersma, C.T. Hess and K. Guiseppe. 2006. Heavy metal contamination from historic mining in upland soil and estuarine sediments of Egypt Bay, Maine, USA. *Estuary, Coastal and Shelf Science*. Accepted.

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## MUNSUNGAN WORKSHOPS

Irland, L., G. Jacobson, R. Seymour, and G.B. Wiersma. "Long-term Monitoring and Data Systems: New Paradigms for Basic Research." December 5, 2006. Workshop sponsored by the Center for Research on Sustainable Forests. University of Maine, Orono, Maine.

Bethers, S., I. Fernandez, R. Jagels, S. Norton, and G.B. Wiersma. "Calcium Cycling: Insights from Bear Brook Watershed in Maine." February 21, 2007. Workshop sponsored by the Center for Research on Sustainable Forests. University of Maine, Orono, Maine.

## PRESENTATIONS

Wiersma, G.B. The Bear Brook Watershed in Maine. September 14, 2006. Presentation. Department of Forestry, College of Agriculture, University of Kentucky, Lexington, KY.

Wiersma, G.B. Center for Research on Sustainable Forests. September 27, 2006. Presentation. Department of Forestry, College of Agriculture, University of Kentucky, Lexington, KY.

Wiersma, G.B. Center for Research on Sustainable Forests. October 4, 2006. Presentation. Cooperative Forestry Research Unit Fall meeting.

Wiersma, G.B. Center for Research on Sustainable Forests. October 20, 2006. Presentation. School of Forest Resources faculty and staff.

Wiersma, G.B. Center for Research on Sustainable Forests. November 22, 2006. Presentation. Chinese forestry delegation visiting from Hunan Province, at the University of Maine.

Wiersma, G.B. Maine ForCAST Initiative. Presentation. April 25, 2007. Cooperative Forestry Research Unit.

Wiersma, G.B. Maine ForCAST Initiative Presentation. May 14, 2007. Presentation. Small Woodland Owners Association of Maine.



Bethers, S., M. Day, I. Fernandez, and G.B. Wiersma. 2007. Unraveling the physiological effects of elevated acid deposition on sugar maple regeneration. Poster & abstract. North American Forest Ecosystem Workshop. Vancouver, British Columbia, Canada. June 21, 2007.

NATURAL  
RESOURCES  
NETWORK  
ROLLOUT  
NOVEMBER 4,  
2006

Director Bruce Wiersma was the spokesperson for the opening ceremonies for Maine's Natural Resources Network, which brings together groups involved in

Maine's natural resources sector to help groups with similar interests work collaboratively in state government.

CAPITOL HILL DAY  
MARCH 21, 2007

CRSF attended UMaine Capitol Hill Day in Washington, D.C. to showcase and promote their research programs along with other UMaine groups to legislators.

## NORTHEASTERN STATES RESEARCH COOPERATIVE

The [Northeastern States Research Cooperative](#) (NSRC) is a competitive research grant program specifically created for studies of the 26 million acre Northern Forest—a forested region spanning the states of Maine, New Hampshire, Vermont, and New York.

Established by Congress in 1998 (Public Law 105-185), the NSRC supports cross-disciplinary, collaborative ecosystem, socio-economic, forest product, and conservation research that benefits the unique landscapes and communities of the Northern Forest region.



Funding for the NSRC has been championed in Congress by Senators Susan Collins and Olympia Snowe of Maine, Judd Gregg of New Hampshire, Patrick Leahy of Vermont, and Hillary Clinton

of New York. Currently, New Hampshire and Vermont receive \$1M in funding and Maine receives \$334,000. New York has yet to receive funding.

Each state has a research theme. Maine's is Forest Productivity & Products. Seven projects and one Ph.D. student were funded out of the 22 original pre-proposals that were received. The 2007 projects will be funded for one year, with funding for the second year contingent on 2008 congressional funding.

### 2007 FUNDED THEME THREE PROJECTS

Lead PI: Michael Greenwood, ME.  
Co-PI: Robert Seymour, ME.  
*A proposal to identify and produce weevil-resistant white pine*

Lead PI: David Hollinger, US Forest Service. Co-PI: Andrew Richardson, NH.  
*Climate change consequences of forest management practices*

Lead PI: Rakesh Minocha, USFS.  
Co-PIs: John Brissette (USFS) and Robert G. Wagner (ME).  
*Monitoring physiological responses of forest trees to thinning treatments in order to evaluate the use of selected metabolites as markers of tree health and stand productivity*

PI: Steve Sader, ME.  
*Quantifying partial harvest rates, intensity, and residual stand composition among stable and changing forest landowner groups in northern Maine*

Lead PI: Robert Seymour, ME. Co-PIs: Robert Lilieholm (ME) and Jeffrey Benjamin (ME).  
*Growth, lumber yields, and financial maturity of archetype, isolated eastern white pine crop trees*

Ph.D. student: Justin Waskiewicz, ME. Co-advisors: Laura Kenefic (USFS) and Robert Seymour (ME).  
*Influence of neighborhood structure on growth and advance regeneration in mixed northern red oak/eastern white pine stands*

Lead PI: Jeremy Wilson, ME. Co-PIs: John Brissette (USFS), Laura Kenefic (USFS), Robert Lilieholm (ME), Ralph Nyland (NY).  
*Rehabilitation of cutover mixed-wood stands: an economic and silvicultural assessment of alternatives*

Lead PI: Ruth Yanai, NY. Co-PIs: Doug Allen (NY), Jerry Carlson (NY), Laura Lautz (NY), Dylan Parry (NY), Sandy Wilmot (VT).  
*A decision-support system for forest management under forest tent caterpillar defoliation*



## COOPERATIVE FORESTRY RESEARCH UNIT

The CFRU is housed in the CRSF. Much of the Center's funding is from the CFRU and they have many ongoing projects. See the latest [Cooperative Forestry Research Unit Annual Report](#) for more details.

## Forests for Maine's Future

The CRSF is a member of a group called Forests for Maine's Future (FMF). This is a partnership of Maine forestry groups (CRSF, The Maine TREE Foundation, The Maine Forest Service, and the Small Woodland Owners Association of Maine). The group was formed in 2005 to provide information on the health of Maine's forests to Maine citizens and hopefully raise awareness

of issues related to the forest. In October 2006, FMF held a free public expo in Portland, with over 70 exhibitors. The theme, "All Things Woods," was chosen to show Maine people how well the forests of Maine are doing and what kinds of products, jobs, and activities come from them. About 400 people attended the event. FMF is working on improving the concept for another expo, in March 2008. More emphasis will be

placed on education and activities, and a grant has been applied for to fund a full day of youth activities. A new Public Relations person has been hired for FY 2008 and will emphasize stories on the health of Maine's forests, with articles, a redesigned website, electronic biweekly newsletters, and possibly television spots.

### THE MAINE FORCAST INITIATIVE: AN INTEGRATED EFFORT FOR CRSF'S 1<sup>ST</sup> YEAR

University of Maine faculty, industry and state forestry representatives met in December 2006 for the CRSF's 1<sup>st</sup> Munsungan workshop, "Long-Term Monitoring & Data Systems: New Paradigms for Basic Research." The goal of this workshop was to evaluate the usefulness, accessibility, and maintenance of long-term forest and environmental data sets. Enthusiastic interest was shown, and several key faculty and staff (Spencer Meyer, Steve Sader, Bob Seymour, Bob Wagner, and Bruce Wiersma) formed a smaller committee to begin work on what is now known as the Maine For-

CAST (Forest Conditions, Assessment, Status, and Trends) Initiative. Working with scientists of overlapping disciplines and with State organizations who would benefit from



the implementation of such a project, ForCAST's future as a project is looking bright. The first position to be filled is an associate scientist of remote sensing. This position will be part of the CRSF. More detailed information can be found in the drafts of the ForCAST plan, and a staff retreat is being planned for Winter 2008, with a ForCAST Prospectus as the objective. So far ForCAST has been able to raise almost \$185,000 in funds for FY 2008 and more is expected in subsequent years.

## LOOKING AHEAD: GOALS & OBJECTIVES FOR 2007-2008

### OVERALL CRSF GOAL:

To expand the amount of extramural funding support for forest resources research at UMaine, and to serve as Maine's primary point-of-contact and information source about key forest resources issues.

### NORTHEASTERN STATES RESEARCH COOPERATIVE

*Goal:* To provide practical and directed research support to the Northern forest lands to the overall benefit to the people who live within its boundaries, work with its resources use its products and enjoy its lands.

#### *Objectives:*

1. Fund second year of the approved FY 2007 competitive research projects.
2. Work to obtain \$350,000 for Maine for FY 2008
3. Continue excellent integration

and collaboration with other three cooperators of the NSRC (NH,VT, NY.)

### COOPERATIVE FORESTRY RESEARCH UNIT

*Goal:* Provide high quality and timely applied forest research for Maine's forest land owners and managers.

#### *Objectives:*

1. Maintain excellent working relationships with CFRU cooperators
2. Maintain funding base at ~\$450,000.
3. Continue excellent efforts to disseminate research knowledge developed.

### FORESTS FOR MAINE'S FUTURE

*Goal:* Forest for Maine's Future's web site will be the site of choice for anyone who wants to obtain highly credible and timely information on issues related to the Maine forests.

#### *Objectives:*

1. Continue to work with partner organizations.
2. Raise \$40,000 for FMF's FY 2008 operations.
3. Upgrade FMF web site through our sub-contractor Andy Kekacs.
4. Plan and execute public forest exposition for Spring 2008.
5. Expand number of news stories related to the Maine forest placed in Maine daily and weekly newspapers.

### MAINE FORCAST INITIATIVE

*Goal:* The goal of the Maine ForCAST initiative is to have all people who want to know how Maine's forests are changing to think immediately of the Maine ForCAST initiative as the location to find that information.

#### *Objectives:*

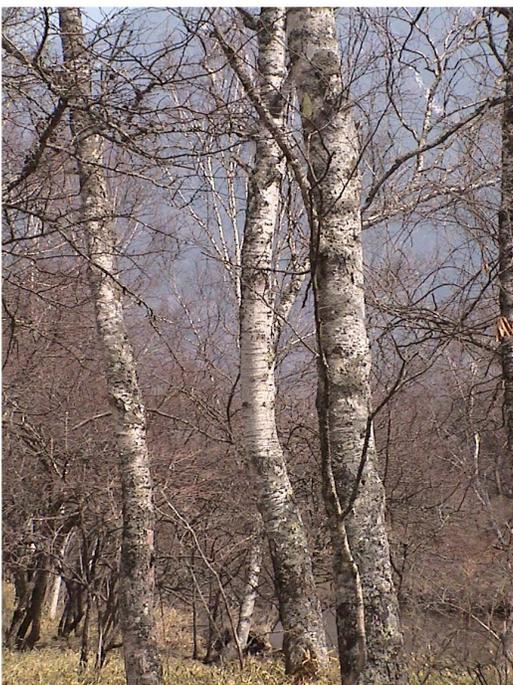
1. Hire Associate Scientist to provide data collection and data analysis support for preparing statewide and regional databases that will be used by CRSF researchers to examine trends in forest composition, structure, and forest cover change.
2. Use predictive species occurrence models to quantify the effects of past forest management on the amount and spatial configuration of Canada lynx and American marten habitat.
3. Initially present research results in a Ph.D dissertation and begin developing reports that will be available on a new ForCAST website. Published manuscripts are expected by Summer 2008.

### MUNSUNGAN FUND

*Goal:* To hold meetings that are related to forest resource issues.

#### *Objective:*

1. Continue to work with Cooperating Faculty to plan and hold at least two workshops or seminars in FY 08. One is tentatively planned for November.



## CHALLENGES & SOLUTIONS

### THE MAJOR CHALLENGES FACING THE CRSF ARE:

1. Successfully develop our ability to forecast the future of the Maine forests.
2. Strengthen forest resources research infrastructure base.
3. Build up the extramural grant base.
4. Maintain funding for the Northeastern States Research Cooperative.

### HOW THE CRSF PLANS ON DOING THIS:

The approach to developing the Maine ForCAST initiative is described in some detail in the section on ForCAST. The Center will need to work to develop out year funding bases for this initiative but there has been enthusiastic responses to the concept and it is believed that the CRSF will successfully raise the needed funds.

In order for forest resources research to move forward at the University of Maine and reach its full potential (the full potential that Maine people need to fully utilize and enjoy Maine's forest resources, as well as how to manage them) research base infrastructure must be strengthened. The plan to do this involves developing a multi-million dollar research proposal and submitting it as a competitive grant to the Maine Technology Institute in FY 2008 in the Agriculture and Forestry section. The technical proposal will use ForCAST as the base around which the infrastructure needs will be developed. In order for this to be successful, CRSF will also need to develop significant constituent interest and support base. This process has already began, and CRSF cooperators are willing to work with the University to help ensure that a significant bond issue is passed by Maine voters in the November 2008 elections.

To meet the early goals of the CRSF and to strengthen the overall research ability, a successful extramural grant program must be developed. There are particularly lucrative opportunities in several major federal research funding agencies. The Center's emphasis on interdisciplinary research efforts (a perfect example being For CAST) gives the Center a competitive edge in successfully obtaining a major extramural competitive grant. Given the age of the CRSF (just over a year old), juxtaposed against anticipated federal agency timing constraints, this effort will be planned this year, though CRSF may not be able to submit major grant requests until FY 2009.

The CRSF will continue working with partners in New Hampshire, Vermont and New York to help maintain the NSRC as a critical component of the US Forest Service's annual budget.

## LONG-TERM PRIORITIES

1. Develop ForCAST in order to meet the project's goal, which is to have it be the method of choice for decision makers interested in knowing the projected long term trends and anticipated changes in the Maine forests.
2. Maintain the excellent working relations already existing with the forest industry and landowner cooperators that make up the governing and advisory body for the Cooperative Forestry Research Unit.
3. Maintain federal funding for the Northeastern States Research Cooperative.
4. Expand the Forests for Maine's Future program.