

Minnesota's Forest & Bioeconomy (HF 838; SF 1067)

Forest Optimization Tool

- Data and information needed to maximize forest values (clean water, habitat, wood fiber)
- Map-based planning tool will leverage forest resource information to provide insights into enhancing forest benefits

Minnesota Natural Resources Atlas

- Online, interactive GIS mapping tool accessing >200 databases to provide customizable output related to resources, infrastructure, wildlife and other values
- Expand Atlas statewide, incorporating forest and agricultural resources for public availability

Biochar Development & Application to Forest Health

- Biochar will increase forest health and carbon sequestration
- Identify optimal biochar compositions and application methods; address barriers to practical use

Clean Syngas; High-Value Markets for Forest Biomass

- Transform forest residuals into renewable energy sources and high value chemicals
- Develop Minnesota technology to demonstrate technical and economic feasibility

Can Minnesota forests support tomorrow's economy?

Yes. With investment in understanding...

- Forest Productivity
- Forest Health & Protection
- High Value, High Tech Opportunities → Jobs



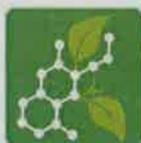
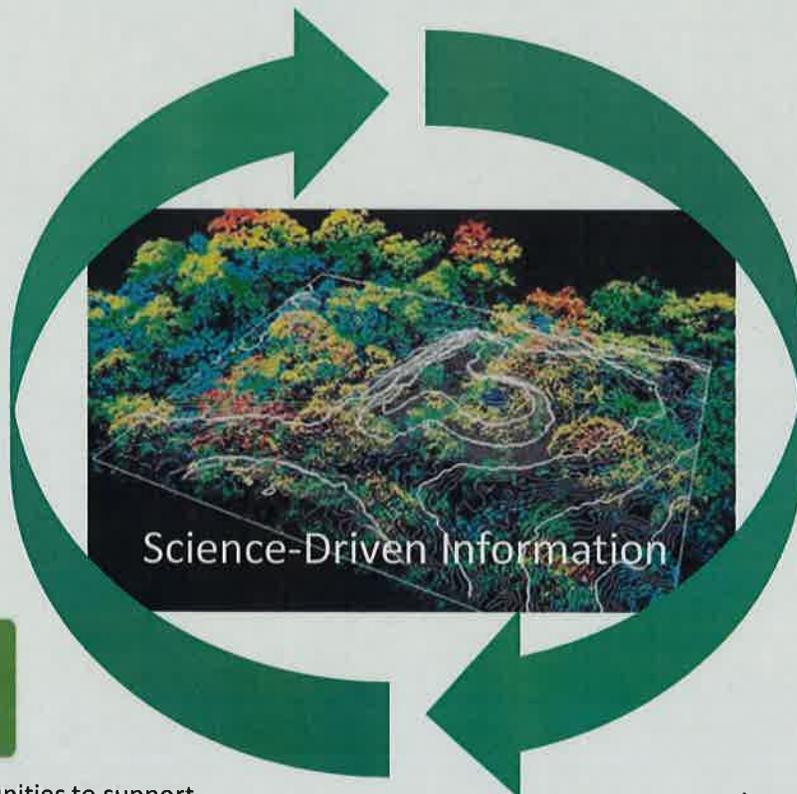
Minnesota Forest Opportunities

What do MN forests do for us?



Can we improve productivity, health and economic benefits?

How can we use data to make the best decisions?



New, value-added opportunities to support Minnesota's evolving forest industries.

Accessible data for natural resources planning, management and research.

Innovative Research. Minnesota Value. Global Relevance.

TWO INDUSTRIAL RESEARCH SITES:

NRRI has extensive capabilities to research and deliver at the bench-to-pilot scales, reducing risk inherent in commercializing innovations. NRRI Duluth has 19 labs to meeting the needs of land, wildlife, water and minerals research. There's also an additive manufacturing lab and several technology development labs. NRRI's Coleraine facility is a 27-acre site focused on minerals and bio-based energy research.



NRRI IMPACT:

In FY 2018, NRRI collaborated with more than 80 regional clients, ranging from small and mid-size businesses to government and non-profit entities.

"It's great to have an independent research facility that can help us pursue a product or design or idea that helps our process."

- Dave Hanskala

ME Elecmetal, Duluth, MN

"NRRI helps us stay competitive and streamline as we grow."

- Kelly Bartz

Loll Designs/Epicurean, Duluth, MN



Natural Resources Research Institute

UNIVERSITY OF MINNESOTA DULUTH

Driven to Discover

Our Research Goes to Work

OUR MISSION:

Deliver solutions for responsible management of Minnesota's economy, environment and resources for resilient communities.

A UNIQUE APPLIED RESEARCH APPROACH: TO DEVELOP AND DELIVER

NRRI was chartered by the Minnesota State Legislature in 1983. Its original mission is as relevant as ever. Employing over 140 scientists, engineers and technicians NRRI performs applied research to develop and deliver the understanding and tools needed to utilize the state's resources in a balanced and responsible manner. *Maintaining a strong natural resources-based economy with a healthy environment ensures sustainable communities as a legacy to future generations.*



OUR RESEARCH TEAMS:

NRRI provides research and development, tools and data to stakeholders in the following areas:

- Energy
- Minerals & Metallurgy
- Forest & Wildlife
- Water
- Wood Products & Bioeconomy
- Business Support

"What NRRI brings us is the chemical and technical expertise we just don't have in-house."

- Peggy Jones

American Peat Technology
Aitken, MN

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What does the MFRC do?

Managing Sites

We develop and update forest management guidelines to ensure that loggers, foresters and landowners are using effective practices to sustain and conserve our forest resources. The MFRC's voluntary forest management guidelines are a set of practical, science-based practices for protecting wildlife habitat, soils, water quality, wetlands, aesthetics, and historic and cultural resources. These guidelines are widely used by loggers, managers and owners of private and public lands, to minimize impacts to forest resources during management activities such as timber harvesting.



Managing Landscapes

We assist landowners and citizens in sustaining and enhancing the resources of Minnesota's six major forested regions. Landscape level planning and coordination is a way of assessing and promoting forest resource sustainability across large forested landscapes. The Landscape Program supports six regional landscape committees that serve as a forum where forestland owners and stakeholders work together to address forest resource issues in their regions.

Research and Monitoring

We conduct and support key research that improves forest management and the sustainable use of forest resources. These efforts include work conducted by the MFRCs **Research Advisory Committee (RAC)** and its **Applied Research and Monitoring Program**. Some recent work includes:

- Identification of priority forest resource research needs by the RAC
- Assessing guideline effectiveness related to wildlife, soils, and water
- Assessing effects of forest management on water quality
- Evaluating effect of climate on soil operability during harvesting
- Determining impacts of EAB on forests and the development of mitigation strategies



The MFRC also provides oversight and program direction to monitoring programs administered by the DNR, including monitoring implementation of the forest management guidelines at recently harvested sites in forested watersheds of the state.

Forest Policy

We advise the Governor, legislature and public agencies on sustainable forest policies. Since 2001, the MFRC has advised the Governor and legislature on retaining large areas of forestland, strengthening Minnesota's position in the global forest products market, increasing bioenergy use, mitigating and adapting to climate change, fighting invasive species, forestland taxation and federal roadless areas. In 2010, at the request of the Lessard-Sams Outdoor Heritage Council, the MFRC and Minnesota Forest Resources Partnership identified high priority opportunities for conserving forest habitat in Minnesota.



Minnesota Forest Resources Council

Minnesota's forests provide tremendous benefit to all our citizens, including a wealth of resources such as clean drinking water, timber, wildlife, and biodiversity. Covering one-third of the state's land area, forests are vitally important to many of the state's economies, communities and environments. To help the many public and private interests in Minnesota's forests work together and ensure the sustainability of these resources, it is important to manage forests through a shared vision and policies that are integrated with the practices implemented on the ground.

In 1995, the Minnesota Legislature created the **Minnesota Forest Resources Council** (MFRC) as part of a comprehensive approach for sustaining our forests via the Sustainable Forest Resources Act (SFRA – § 89A). The MFRC is a forum where diverse interests discuss and resolve issues regarding the management of Minnesota's forests. The MFRC has helped depoliticize forestry in Minnesota by focusing on collaboration and science. The MFRC promotes long-term sustainable management of Minnesota's forests in three primary ways:

- Advise the Governor and federal, state, and local governments on sustainable forest resource policies
- Coordinate site- and landscape-level forest management approaches across all ownerships in the state
- Conduct and support forest resources research to guide *science-based solutions* to complex management issues

mn.gov/frc

The Minnesota Forest Resources Council (MFRC) is a 17-member board created under MN statute 89a to develop recommendations on sustainable forest management policies and practices. Council members are appointed by the governor and represent a wide range of forest resource interests.

Representing:

Commercial Logging Contractors
Conservation Organizations
County Land Commissioners
Department of Natural Resources
Environmental Organizations
Forest Products Industry
Games Species Management
Indian Affairs Council
Labor Organizations
Nonindustrial Forest Landowners
Research and Higher Education
Resort and Tourism Industry
Secondary Manufacturing
USDA – Forest Service



Every four years, the MFRC develops a set of strategic forest resource policy initiatives. The current policy priorities are:

- Competitiveness of the forest products industry
- Water quality and forests
- Private forest management
- Terrestrial invasive species