

NRRI Mission:

Deliver research solutions to balance our economy, resources and environment for resilient communities.

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From the Editor:

NRRI is shining a bright light on ways to reach out to our stakeholders -- you. During 2016 we unveiled two new ways of doing that.

Our fiscal year accomplishments, projects, financial information and more have been compiled in an Annual Report for your scrutiny. Please contact us to request a printed copy or view it on our website, under "Publications."

We also engaged UMD's Bureau of Business & Economic Research to conduct a survey of our stakeholders on how we're doing meeting our mission. We extend thanks to those who participated and share highlights of what we learned in this issue.

2017 is shaping up to be a big year for NRRI in terms of impact and we look forward to sharing results with you. Please share this newsletter with your colleagues.

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Creating jobs in the northland with deconstruction

Seven years ago, Duane Fisher knew it was time to shake off city life for a quieter life in the country. So, as a member of the Leech Lake Ojibwe band, he moved from Minneapolis to Bemidji with some basic construction skills and a good work ethic.

Today he's one of 12 on a crew of men who are doing the opposite of construction – deconstruction – and recycling the wood and fixtures in old structures. In October, they diligently wrenched two-by-fours apart and stacked pressed board into piles from an old motel on Highway 2 in Cass Lake. The usable materials will be made into new products or sold as construction material.

Fisher is part of a social enterprise called Miigwech Aki, or "Thank you, Earth" led by Director Christopher Bedeau. The goal is to provide jobs and training in northern Minnesota, partnering with tribes and local communities, while honoring Mother Earth by diverting resources from landfills.

"This program is an inspiration for me," said Fisher. "What I saw in the cities, I know a lot of construction companies are not recycling their materials. Maybe someday I can start a business that goes to construction sites and recycles their waste."

Miigwech Aki started in 2012 as a pilot partnership with funding from the Department of Employment and Economic Development (DEED) introducing Bedeau at the Northwest Indian Community Development Center to Better Futures Minnesota. Could the Minneapolis-based deconstruction model of creating jobs and teaching skills to men released from prison work in northern Minnesota?

"This is a great collaboration for our Tribal Employment Rights Office," said Brian Lussier, TERO Compliance Officer. "For TERO, our biggest challenge is always jobs. This is a huge opportunity for these guys."

In addition to job skills and a solid wage, the crew is offered expensive OSHA-30



NRRI is helping a social enterprise organization in northern Minnesota provide job skills and opportunities through the Leech Lake Tribal Employment Rights Office.

certification training which makes them even more employable.

NRRI had been working with Better Futures Minnesota since 2014, helping them find markets with the most value for the resources pulled from old structures. And it was NRRI involvement in the DEED grant that connected Better Futures and Miigwech Aki. Then in 2016, the three organizations received joint funding from the Environment and Natural Resources Trust Fund to move the project out of the pilot stage adding the additional step of documenting the reduction in greenhouse gas emissions.

"We know wood species and wood grades," said NRRI Scientist Victor Krause. "So, we're helping them assess the value, quality and quantity of materials harvested. The environmental impact of this organization is amazing, but for me, personally, the impact on people's lives is so meaningful."

Krause and his wood products team also found a simple bench design that could be

made out of the recycled wood, then sold to state parks. This adds value to the materials locally, and adds the construction element to deconstruction skills.

"And the whole story can be told with the benches," said Bedeau. "From their recycled wood, to the jobs created and skills gained by the crew, then diversion from the landfill and reduced carbon emissions. We're reinvesting in the community."

Bedeau's goal for Miigwech Aki is to move people through the program and on their way to careers with large construction firms. Kraus-Anderson is one of the conduits for crew members after they've learned basic skills, job site safety and the rewards of a working wage.

"I just need to keep the work flowing," said Bedeau. "We need to build our capacity and reputation for quality work. And we're doing that step-by-step. If we can keep them working, keep money in their pocket so they can provide for their families, it makes them feel good."

Study finds high value in NRRI applied research for Minnesota

A new study aimed at estimating the value of the Natural Resources Research Institute (NRRI) finds the institution is giving back to Minnesota tenfold on its investment.

The findings highlight the amount that NRRI is able to leverage the state funding it receives, roughly \$2.4 million in fiscal year 2016, to earn competitive grants and contracts and how those funds spur economic activity throughout the state. The study was conducted by UMD's Bureau of Business and Economic Research (BBER) covering NRRI's fiscal year of July 2015 – June 2016.

NRRI was created by the state legislature at the University of Minnesota Duluth in 1983 as an economic development engine to address the challenges of a natural resource-based economy with science and technology advancements. Its strategic research areas encompass energy, water and materials.

"Given NRRI's unique and relevant mission, we need to measure our impact and



NRRI R&D developed a new product which expanded a Winona business.

communicate those results with our stakeholders," said NRRI Executive Director Rolf Weberg. "We appreciate the many positive reviews and suggestions. With this feedback we will set the bar even higher for next year."

More than 200 NRRI business and agency partners were surveyed. Businesses reported

an average savings of \$60,000 - \$100,000 due to NRRI assistance, along with an average of seven to 12 estimated new or retained jobs.

Average cost savings for state, federal, and other agencies were reported between \$40,000 - \$50,000, with time savings of about six months per project as a result of partnering with NRRI. Altogether, the report estimates that NRRI saved these agencies upwards of \$1.5 million over the past year.

Ninety eight percent of survey responders, both business and agency, said they would recommend NRRI's services to their colleagues citing their product development and industry expertise, collaborative nature, decades of experience and familiarity with the region.

The BBER report further states that, as an employer of around 130 people at two sites, NRRI generated more than 250 new jobs, \$17.5 million in wages, more than \$23 million to the state's gross regional product, and nearly \$35 million in total output statewide during 2016.

Research on marten habitat informs long-term forest planning

The American marten prefers hollow logs and tree cavities as protection when they sleep and care for young. The problem is that those structures take a long time to develop — 75 years or more.

Because of the marten's need for structurally complex, older forests, the DNR wants to be sure management for those forest types is carefully planned.

NRRI Researcher and UMD doctoral candidate Michael Joyce is studying their habitat in collaboration with the MN DNR to understand what makes good habitat for the marten, and their larger cousin, the fisher. Joyce started his research in 2011 and is

using both high tech tools and low tech tromping to gather data to develop models that predict great marten habitat.

LiDAR – Light Detection and Ranging – is a remote sensing method that uses light in the form of a pulsed laser to measure variable distances. After measuring and collecting forest plot data on the ground, Joyce identified habitat variables. Now he can apply those variables to the spatially continuous data collected by LiDAR. It allows Joyce to see the whole landscape on his computer screen in high-definition detail beyond where his boots can go.

"We can see the tree types, trails, logs on the ground... things we know are important to



Photo: M. Joyce

martens," he explained.

Ultimately, Joyce will be able to provide county, state and federal forest managers with the information they need to plan a variety of forest types.



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