**PROJECT TITLE:** Communicating About Science: knowledge exchange in forest management.

**I. PROJECT STATEMENT**

The **goal of this project** is to improve our understanding of how science is used by DNR forestry and facilitate better communication between forest managers and scientists, thereby ensuring more effective science-based forest management. In this project we will identify areas of disconnect between scientists and managers, and then design training interventions to fill these gaps, thereby improving the management of Minnesota’s largest forest landowner, the DNR, who manages 3.7 million acres of forestland. In an era of shifting disturbance regimes and shorter frozen-ground seasons, forest managers need information that enables them to innovate to solve emerging problems. Yet a variety of evidence from inside of the DNR, UMN, and other research organizations indicates that scientists are often not aware of the research questions that are most relevant to managers, and managers are often unaware of the latest management-relevant scientific findings.

This project has 2 goals:

1. **Publish a report identifying gaps between scientific knowledge and forest management practice in the Minnesota DNR.** We will utilize techniques developed by PI Fleischman in his federally funded research to analyze the exchange of scientific information between field foresters and scientists, and identify priority areas for scientific investment and improved communication.

**Develop and test new ways to generate and deliver reliable information to inform innovation and experimentation in managing complex forest systems for multiple goals.**

Achieving these goals **will improve forest management effectiveness, enhancing the ecological and economic resilience of Minnesota’s forests to emerging threats.**

**II. PROJECT ACTIVITIES AND OUTCOMES**

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| **Activity 1 Title: Identify and publish gaps between scientific knowledge and forest management practice, using Minnesota DNR as a test case.**  **Description:**We will interview 30 field foresters responsible for making on-the-ground decisions on DNR lands. These interviews will focus on understanding what knowledge foresters draw on when making management decisions, and where they obtain this knowledge. We will then track down and analyze these information sources. We will use analytic techniques developed with funding from the National Science Foundation to examine how information is used in written documents. Then we will interview information providers, including other DNR staff (for example, area and program supervisors, staff from other divisions), as well as university scientists and educators, who provide information to the field staff. Finally, we will examine relevant scientific publications from UMN, the USFS, and other research organizations and interview the scientists involved in producing that knowledge, to understand how science moves from lab to field, and how research questions move from field to lab.  **ENRTF BUDGET: $60,000** |  |

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| **Outcome** | **Completion Date** |
| *1. Interview 30 DNR field foresters, 15 other DNR staff, and 15 scientists. Analyze referenced documents* | *December 2021* |
| *2. Publish report on knowledge exchange in Minnesota DNR* | *June 2022* |

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| **Activity 2 Title: Innovate in training & research to deliver the right science to the right people to improve forest management**  **Description:**We will build on the analysis conducted in Activity 1 to identify, in collaboration with the DNR, two priority knowledge gaps where available scientific information is being under-used by DNR field foresters. We will develop innovative, technology assisted methods to communicate this information to practicing natural resource practitioners. Leveraging the broad connections in the U’s Sustainable Forests Education Cooperative (SFEC), we will test different methods to deliver scientific knowledge to practitioners in ways that lead to adoption and experimentation. We will assess knowledge gain, barriers to change, and land managers’ ability to use their knowledge in the field. We will use the findings of these trials to inform the design of future trainings conducted by the SFEC and make our findings available to other programs that provide forestry education in the state. We will also bring findings on scientific information needs back to the DNR, the U of M, and other research organizations. Our findings about knowledge gaps will be used to insure that future research proposals from the University to LCCMR and other funders will provide valuable and needed information to continue the sustainable management of forests within Minnesota.  **ENRTF BUDGET: $120,000** |  |

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| **Outcome** | **Completion Date** |
| *1. Develop new learning modules that fill knowledge exchange gaps* | *August 2022* |
| *2. Provide recommendations to University scientists on DNR research priorities* | *August 2022* |
| *3. Complete training process, provide recommendations on learning models which effectively and efficiently provide knowledge transfer between scientists and Natural Resource Professionals* | *August 2023* |

**III. PROJECT PARTNERS AND COLLABORATORS:**

All funding will be used directly by the University of Minnesota to support the work of the three co-PIs, Drs. Forrest Fleischman (social science), Marcella Windmuller-Campione (forest management), and Eli Sagor (education). We will collaborate closely with DNR forestry. Our main collaborator there will be Amanda Keuper, whose responsibilities include interfacing between researchers and DNR forestry managers.

**IV. LONG-TERM IMPLEMENTATION AND FUNDING:**

Since 1963, approximately $999 million has been appropriated to more than 2,200 projects through LCCMR. Our goal is to ensure that projects related to forest management are reaching the end user and to ensure that relevant applied research is being conducted in Minnesota to ensure healthy, resilience forests now and in the future. Our aim is to provide recommendations and trial techniques that will be adopted and integrated into the regular practices of DNR, the University of Minnesota, and other land management and research organizations in the state, without requiring additional funding beyond the three year cycle of this project.