Environment and Natural Resources Trust Fund
2017 Request for Proposals (RFP)

Project Title: **ENRTF ID:**   **008-A**

Scientific Data Deli: Serving Data for Environmental Innovation

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: $ 324,159

Proposed Project Time Period for the Funding Requested: 2 years, July 2017 – June 2019

Summary:

The Scientific Data Deli will provide faster, easier access and use of DNR's scientific datasets to support innovative research and inform better natural resource decisions.

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Web Address

Location

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

This graphic shows features and prototype screen shots of the proposed DNR Scientific Data Deli. Features include 1) finding data using a modern user-friendly interface and well cataloged data for efficient searches; 2) exploring data by previewing data as tables, graphs, or maps; and 3) using data via easy downloads of data in multiple formats.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____%

PROJECT TITLE: Scientific Data Deli: Serving Data for Environmental Innovation

I. PROJECT STATEMENT

The ability to easily find, access, and analyze historical data provides a key foundation for the development and assessment of natural resource management decisions. The Minnesota Department of Natural Resources (DNR) has conducted natural resource inventories, surveys, and research on forests, fisheries, wildlife, plant communities, and waters and maintains decades of this data. The complex natural resource challenges faced today make the ability to access and analyze this data invaluable. For instance, data originally collected for a specific purpose, such as administrative records for rearing hatchery fish, if accessible in usable formats, could support a new analysis for a previously unanticipated purpose, such as fish population response to climate change. The data collected in vegetation surveys can be used to help predict the future spread of invasive species. With current information technology we can help natural resource managers, researchers, students, and the public efficiently find this data, evaluate it for use, and use it to inform better natural resource decisions.

This project will design and develop the DNR Scientific Data Deli using state-of-the-art information management technologies and practices to archive and share foundational natural resource data that the DNR has collected for decades on millions of acres of lands and waters and hundreds of species. It will provide a new generation of researchers, natural resource managers, citizen scientists, and the public with a faster, cheaper means to find, explore, and use DNR's highest-value scientific datasets. The initial Scientific Data Deli will serve 50 irreplaceable historical datasets to support natural resource research, monitoring, and management. Candidate dataset collections include historical vegetation surveys, forest inventories, species observations, and lake monitoring data.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Data inventory, documentation, and data user engagement   **Budget: $110,000**

We will inventory and document several decades of DNR natural resource survey, research, and inventory data. Natural resource managers, researchers, and other data users will inform the design of the Scientific Data Deli and which datasets will be archived and shared.

Outcome	Completion Date
1. Inventory of DNR natural resource survey, research, and inventory datasets completed	*October 2017*
2. Pilot set of 50 public datasets selected for inclusion in the Scientific Data Deli	*December 2017*
3. Pilot datasets documented to be archived, searched, retrieved, and interpreted	*April 2018*

Activity 2: Design and develop the Scientific Data Deli   **Budget: $195,000**

We will load datasets identified in Activity 1 into the system so that they are securely archived, documented, and can be reviewed by DNR staff prior to the public release.

Outcome	Completion Date
1. 50 datasets added to the system with metadata (e.g. creators/contributors, date, subject keywords, geospatial information, etc.)	*September 2018*
2. Workflow for curating and loading future content into system is documented	*November 2018*
3. 40 DNR staff beta-test the Scientific Data Deli as a new information resource and a tool to archive and share their data	*December 2018*

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Activity 3: Open the Scientific Data Deli to the public   **Budget: $19,159**

We will use a series of presentations and webinars and convene Minnesota's first Natural Resource Data Jam to open the Scientific Data Deli to the public. The two-day 'Data Jam' will convene natural resource managers and other experts with a new generation of natural resource data users, citizen application developers, designers, and analysts. Together they will leverage the data in the Deli and other data sources to create visualizations, analyses, and other applications of the data to address pressing natural resource challenges.

Outcome	Completion Date
1. 200 potential data users (i.e. researchers, students, stakeholders) learn about the Scientific Data Deli through a series of presentations and webinars	*January 2019*
2. 50-75 Natural Resource Data Jam participants produce 4-6 data products that enhance public understanding and inform better natural resource decisions	*April 2019*

III. PROJECT STRATEGY
A. Project Team/Partners
- Project manager: Andy Holdsworth, DNR Office of Policy and Planning
- Contributor: Robert Maki, MN.IT@DNR: As the MN.IT DNR Chief Information Officer, Robert will be responsible for delivering Information Technology services to the project, including recommendations for file and image storage, and search and retrieval systems, as well as web-based publishing solutions.
- Contributor: Tracy Waterman, DNR Librarian: As the DNR librarian, Tracy will be responsible for data taxonomy, metadata management, content curation, and development of workflows for the system.
- 1.5 FTE: Staff person with scientific data asset management experience; student worker assistant.

B. Project Impact and Long-Term Strategy
Creating the Scientific Data Deli will:
- Provide faster, easier access and use of DNR scientific datasets. Natural resource managers, researchers, students, citizen scientists and the public will have a central location to find, explore, and use an initial collection of 50 irreplaceable datasets.
- Foster innovative environmental research. Finding existing data is critical for research and other natural resource management projects. For instance, DNR's 52 years of vegetation plot data has been used in many major projects, including updated mapping of wildland fire potential in the Great Lakes region. The Scientific Data Deli will make this and many other significant datasets accessible to many more researchers doing innovative research projects.

There is a successful precedent for the Scientific Data Deli. It is inspired by the success of the DNR Data Deli that annually served over 33,000 downloads of geospatial data about Minnesota. The Scientific Data Deli will be built on a framework that effectively addresses long-standing needs to properly archive datasets and growing opportunities to effectively share them with others for improved conservation results. Following this two-year project the DNR will support and maintain the Scientific Data Deli to archive and share additional datasets and future natural resource inventories, surveys, and research.

C. Timeline Requirements
We are requesting a 24-month timeline to carry out the proposed project.

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2017 Detailed Project Budget

Project Title: Scientific Data Deli: Serving Data for Environmental Innovation

IV. TOTAL ENRTF REQUEST BUDGET Two years

BUDGET ITEM	AMOUNT
Personnel: DNR scientific data management analyst - 1 FTE for 1.5 years (78% salary, 22% benefits)	$ 150,000
Personnel: DNR digital library assistant- 0.5 FTE for 2 years (78% salary, 22% benefits)	$ 60,000
Professional/Technical/Service Contract: Contract with MN.IT services to develop digital asset management platform, including programming and web development.	$ 85,000
Professional/Technical/Service Contract: scanning and material processing services to digitize material and load into system.	$ 10,000
Travel: Travel for two staff to four DNR regional offices and area offices to inventory and document datasets and consult with DNR staff and other stakeholders. Plus travel for 2 staff to present project results in Mankato, Duluth and Bemidji.	$ 1,500
Direct and Necessary expenses: HR Support ($3,678), Safety Support ($1,030), Financial Support ($3,101), Communication Support ($1,316), IT Support ($7,425), Planning Support ($912), Procurement Support ($197).	$ 17,659
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 324,159

V. OTHER FUNDS

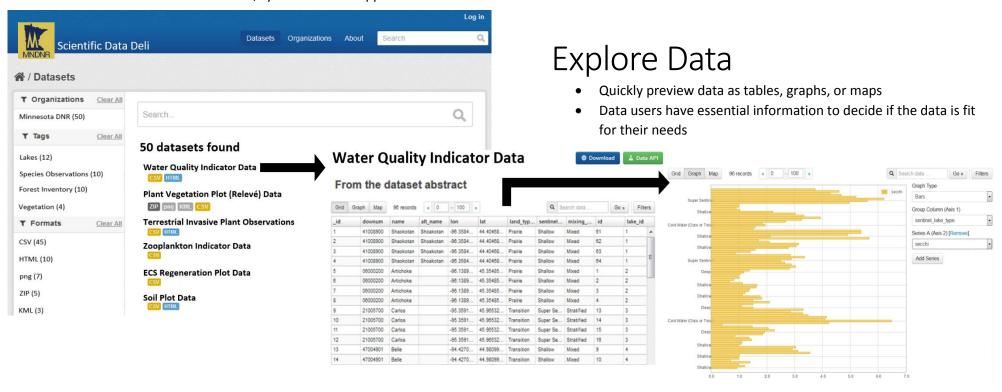| SOURCE OF FUNDS	AMOUNT	Status
In-kind Services To Be Applied To Project During Project Period: *Project management; data policy and procedure development to support Deli, data taxonomy and cataloging, data inventory assistance, and misc. support for public release events.*	$ 60,000	*Pending*

Scientific Data Deli *(features and prototype design)*

Providing faster, easier access and use of DNR's scientific datasets to support innovative research and inform better natural resource decisions

Find Data

- Modern user-friendly interface and well-cataloged data for efficient searches
- Initial collection of 50 datasets; system built to support additional datasets

Explore Data

- Quickly preview data as tables, graphs, or maps
- Data users have essential information to decide if the data is fit for their needs

Use Data

- Easy downloads of data in multiple formats
- To support monitoring and research on habitat management, invasive species, climate change, and other natural resource challenges

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Project Manager Qualifications

Andrew Holdsworth is a conservation scientist and manager with twenty years of natural resource management experience in government, academia, and non-profits. As DNR's Data and Performance Management supervisor, he leads a team of six staff that works to ensure that the DNR has the policies, people, and tools to leverage data and information as a critical asset for delivering natural resource conservation results. In his ten years at DNR, he has led projects to advance strategic conservation, performance measurement, and climate change adaptation at the agency. He has led the development of DNR's Outcomes Tracking System, an agency-wide information system for integrated performance reporting of DNR programs and projects. He co-led the stakeholder team that developed the strategic plan that lead to the creation of DNR's Minnesota Forests for the Future Program. He has managed several GIS projects to identify priority conservation areas in Minnesota. He served as a lead member of the interagency team that developed Minnesota's first Clean Water Fund Performance Report. He also served on the working group that developed the 25 year funding framework for Minnesota's Outdoor Heritage Fund. He has also published research on forest ecology and management, fire ecology, and invasive species. He received his PhD in Conservation Biology from the University of Minnesota.

Organization Description

The Minnesota Department of Natural Resources' mission is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.