

Environment and Natural Resources Trust Fund 2016 Request for Proposals (RFP)

Project Title:**ENRTF ID: 004-A**

A Statewide Monitoring Network for Minnesota's Changing Habitats

Category: A. Foundational Natural Resource Data and Information**Total Project Budget:** \$ 645,821**Proposed Project Time Period for the Funding Requested:** 3 years, July 2016 to June 2019**Summary:**

Design and launch a consolidated statewide network of permanent habitat monitoring sites in Minnesota's prairies, forests and wetlands to prioritize habitats for protection and management in a changing environment.

Name: Daniel Wovcha**Sponsoring Organization:** MN DNR**Address:** 500 Lafayette Rd., Box 25
St. Paul MN 55155**Telephone Number:** (651) 259-5154**Email:** Daniel.Wovcha@state.mn.us**Web Address:** <http://www.dnr.state.mn.us/mbs/index.html>**Location****Region:** Statewide**County Name:** Statewide**City / Township:****Alternate Text for Visual:**

This visual illustrates the benefits of a statewide habitat monitoring network for conservation in MN. Three bubbles across the top of the page contain drawings of examples of stresses affecting Minnesota's habitats, including 1) warmer temperatures & extreme precipitation, 2) invasive species such as emerald ash borer, and 3) habitat fragmentation. Arrows from the habitat stressors point downward to a map of Minnesota dotted with markers representing monitoring sites. Next to the map is a blowup drawing of a monitoring site showing people recording information in a forest habitat. Arrows below the map point downward to three bubbles across the bottom of the page with drawings of examples of conservation activities guided by information from the monitoring network. These examples are 1) effective habitat restoration, 2) prioritized habitat conservation, and 3) focused habitat management.

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



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2016 Main Proposal

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I. PROJECT STATEMENT

This project will design and launch a consolidated statewide network of permanent habitat monitoring sites in Minnesota's prairies, forests and wetlands. It will build off existing monitoring projects that only cover limited habitats, regions, or time periods to answer questions important for sustaining Minnesota's healthy landscapes in a changing environment:

- Which habitats are most resilient to climate change?
- Which habitats are most vulnerable to invasive species such as narrow-leaved cattails and earthworms?
- How does local or regional groundwater extraction affect habitat quality?

Answers to these and other questions will improve the management of Minnesota's habitats, including:

- Identifying responses to extreme weather (drought, flood) for effective habitat restoration.
- Identifying habitats most threatened by invasive species to prioritize protection efforts.
- Informing groundwater-use planning and conservation.

The Minnesota Biological Survey, with statewide experience surveying Minnesota's native habitats, will lead this work in coordination with government agencies, conservation organizations, local communities, and university researchers to:

- **Design a statewide network of at least 1,000 permanent habitat monitoring sites**, balanced across Minnesota's diverse habitat types, landforms, and management needs.
- **Conduct pilot studies at 120 to 150 of these monitoring sites** to test and refine methods.
- **Gain information on habitat change over the last 20 to 30 years** to guide conservation and management decisions.
- **Collect key baseline data** to meet different program and management needs (vegetation plot data, wildlife habitat metrics, forestry stand metrics, fuel loads, hydrology, soils, and climate metrics).

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Design statewide monitoring network and develop methods

Budget: \$198,000

The project team (leader, biometrician, collaborators) will design a network of 1,000 to 1,500 permanent monitoring sites. Sites will be selected across prairie, forest, and wetland habitats and landforms; and will cover a range of ownerships, including protected areas and working landscapes. Sites with historic vegetation plots will be used when possible to measure habitat change over the past 20 to 30 years. The project leader and biometrician will develop and publish methods for collecting field data, with regular review from collaborators to ensure methods complement existing monitoring efforts in Minnesota. The project leader will work with MN.IT Services to develop a web-accessible long-term Habitat Monitoring Database, using the framework of an existing DNR vegetation database to minimize programming costs. The project leader and biometrician will analyze pilot study data at the end of each field season to provide feedback for refining methods.

Outcome	Completion Date
1. Statewide network of permanent habitat monitoring sites published	1/2017
2. Field data collection manuals and forms published	5/2017
3. Web-accessible Habitat Monitoring Database and Monitoring Network website created	9/2017
4. Field data collection manuals and forms revised and republished following pilot studies	6/2019

Activity 2: Conduct pilot studies in three regions of Minnesota

Budget: \$337,000

The project leader will oversee pilot studies to test and refine methods before applying them to the entire statewide network. Pilot studies will collect data at 120 to 150 of the established monitoring sites across three



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different regions of the state. Pilot studies will occur in northern Minnesota forest and wetland habitats; southeastern Minnesota prairie and woodland habitats; and western Minnesota prairie and wetland habitats. Forest locations will be coordinated with the LCCMR 2016 proposal, *Enhancing Forest Inventory using Multiple Remote Sensing Technologies*. Data from pilot studies will be entered into the long-term Habitat Monitoring Database at the end of each field season. The pilot studies will take place during two full field seasons.

Outcome	Completion Date
1. Data collected at 40 to 50 monitoring sites in northern MN	9/2018
2. Data collected at 40 to 50 monitoring sites in southeastern MN	9/2018
3. Data collected at 40 to 50 monitoring sites in western MN	9/2018
4. Data entered into the Habitat Monitoring Database	1/2019

Activity 3: Analysis of recent habitat change

Budget: \$110,821

The biometrician and project leader will evaluate trends in Minnesota's prairie, forest, and wetland habitats over the last 20 to 30 years by comparing pilot study vegetation data to historic vegetation plot data from the same sites. This analysis will provide early information on whether and how habitats are changing in Minnesota because of climate change, invasive species, groundwater extraction and other environmental stressors. This information will be distributed to resource managers, researchers, and communities to prioritize habitats for protection and management.

Outcome	Completion Date
1. Data quality-controlled and formatted	1/2019
2. Habitat trends over the last 20 to 30 years evaluated	6/2019
3. Habitats with greatest change identified and published	6/2019

III. PROJECT STRATEGY

A. Project Team/Partners

The Minnesota Biological Survey will lead this project with considerable input and review from the following collaborators: DNR divisions of Forestry, Ecological and Water Resources, Parks and Trails, and Fish and Wildlife; Minnesota Pollution Control Agency (MPCA); The Nature Conservancy (TNC); University of Minnesota (UMN); U.S. Forest Service (USFS); U.S. Fish & Wildlife Service (USFWS) and Minnesota Association of County Land Commissioners (MACLC). This request does not include funding for the following: MPCA, TNC, UMN, USFS, USFWS, and MACLC.

B. Project Impact and Long-Term Strategy

This monitoring network will provide consistent information on long-term statewide trends in Minnesota's diverse habitats. Government agencies, land managers and local communities need this information to mediate the impacts of invasive species, climate change, and other stressors on Minnesota's prairie, forest, and wetland habitats. Monitoring will be an important focus of the Minnesota Biological Survey after its initial survey of the state's habitats is complete. As such, the Biological Survey will provide the needed stability to maintain this long-term monitoring network and ensure collection of high-quality data into the future.

C. Timeline Requirements

Additional funding will be required after this project to collect data statewide at regular intervals. After the monitoring design and methods are refined during this 3-year project, additional sites can be sampled at a rate of at least 150 per field season. At this rate the first round of statewide monitoring would be completed in 6-8 additional field seasons. After all sites are surveyed, they will need to be revisited at regular intervals in the future to assess habitat changes. Funding for outreach and technical assistance will be needed in the future to implement monitoring results in conservation and management efforts.

2016 Detailed Project Budget

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IV. TOTAL ENRTF REQUEST BUDGET: 2 years

BUDGET ITEM	AMOUNT
Personnel:	\$ -
1 Project Leader: coordination, methods development, publications; 0.70 FTE (70% salary, 30% benefits) for each of 3 years	\$ 168,000
1 Biometrician: sampling design, methods development, data analysis; 0.30 FTE (70% salary, 30% benefits) for each of 3 years	\$ 67,500
8 Natural Resource Specialists: 4 teams of 2 people, each team working approx 1/2 of field season (mid-May thru mid-Sept) to collect pilot study data at monitoring plots, plus field prep before & specimen i.d. afterward; 0.20 FTE (70% salary, 30% benefits) for each of 2 years	\$ 224,000
1 Student Worker: data entry; 0.10 FTE for each of 2 years	\$ 5,300
Professional/Technical/Service Contracts:	\$ -
MN.IT Services: database programming; Service Level Agreement for 14 weeks of programming @ ca. \$100/hour	\$ 56,000
Equipment/Tools/Supplies:	\$ -
Field supplies needed to collect data at monitoring plots, including sub-meter GPS unit (1 @ \$2,900), data recorders (4 @ \$650), mapping GPS units (2 @ \$350), cameras (2 @ \$450), soil pH meters (2 @ \$360), pH meters (2 @ \$300), soil augers (2 @ \$280), tree corers (2 @ \$200), plant specimen collecting and preservation supplies (4 @ \$140), first aid kits (4 @ \$50), and misc field supplies (tapes, plot markers, waterproof notebooks, insect repellent, etc.)	\$ 12,600
Travel:	\$ -
Monthly vehicle charges (\$4,300), mileage (\$12,000), lodging (\$28,800), and meals (\$14,700) to collect field data at pilot study monitoring sites in northern, southeastern, and western MN for 2 field seasons	\$ 59,800
Additional Budget Items: *Direct and Necessary expenses: HR Support (~\$9,312), Safety Support (~\$2,195), Financial Support (~\$7,521), Communication Support (~\$1,236), IT Support (~\$31,293), Planning Support (~\$829) and Procurement Support (~\$235) necessary to accomplishing funded programs/projects.	\$ -
	\$ 52,621
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 645,821

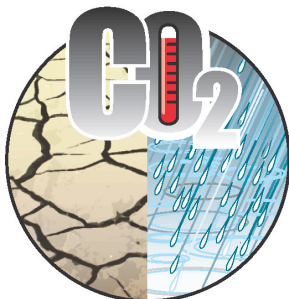
V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ To Be Applied To Project During Project Period:	N/A	
Other State \$ To Be Applied To Project During Project Period:	N/A	
In-kind Services To Be Applied To Project During Project Period:	N/A	
Funding History:	N/A	
Remaining \$ From Current ENRTF Appropriation:	N/A	

A Statewide Monitoring Network for Minnesota's Changing Habitats

Informed Conservation Through Better Monitoring

Habitat stressors, including...



*warmer temperatures
extreme precipitation*



invasive species



habitat fragmentation

**This project:
design and launch a
statewide monitoring
network**



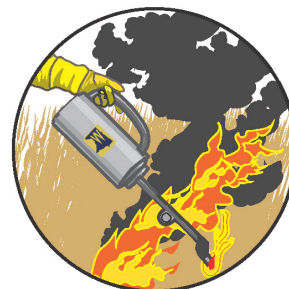
**Informed
conservation,
such as...**



*effective habitat
restoration*



*prioritized habitat
conservation*



2014 RFP Project Proposal: A Statewide Monitoring Network for Minnesota's Changing Habitats

Project Manager: Daniel Wovcha, Plant Ecologist

Affiliation: Minnesota Department of Natural Resources, Division of Ecological & Water Resources
Inventory, Monitoring, and Analysis Unit, Minnesota Biological Survey

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Qualifications

Daniel Wovcha has worked as a plant ecologist with the Minnesota Biological Survey since 1991. Major responsibilities include: 1) development of the MNDNR's native plant community classification with principle roles in project coordination, research, data analysis, writing and editing of field guides; 2) publication of books describing and documenting the results of the Minnesota Biological Survey with principle roles in project coordination, research, writing, editing and photography; 3) management of the MNDNR's Relevé (Vegetation) Database with principle roles in documenting data collection standards, ensuring data quality and distributing data to researchers; 4) field surveys of native plant communities and plant species.

Education

University of Minnesota, Minneapolis, MN. M.S. in Ecology. 1986-90. Research on impact of climate change on long-term water levels in Parkers Prairie, MN sand plain aquifer.

Fulbright Scholar, University of Novi Sad, Novi Sad, Yugoslavia. History & Philosophy of Science. 1985-86. Research on influence of ideology on scientific practice and theory.

Gustavus Adolphus College, St. Peter, MN. B.A. in Biology. 1982-85.

Kent State University, Kent, OH. 1980-82.

Project Responsibilities

Daniel Wovcha will provide overall project direction and assist the project leader with coordination, development of sampling design and methods, and data analysis. In his position as a Minnesota Biological Survey plant ecologist he has had a lead or assisting role in the management and coordination of several major or long-term projects, including the development of the MNDNR's native plant community classification and the publication of books. During these projects he has demonstrated ability to direct staff, coordinate with partners and prepare or assist with project workplans, updates and final reports.

Organization Description

Minnesota Department of Natural Resources - Minnesota Biological Survey

The Minnesota Biological Survey identifies significant natural areas and systematically collects and interprets data on the distribution and ecology of native plant communities, rare plants and rare animals. Delivery of these baseline data helps guide prioritization of sites of biodiversity significance for management, conservation and monitoring of critical habitat and ecological functions.