



Environment and Natural Resources Trust Fund

M.L. 2022 Approved Work Plan

General Information

ID Number: 2022-307

Staff Lead: Michael Varien

Date this document submitted to LCCMR: August 30, 2024

Project Title: Emerging Issue: CWD Prions in Minnesota Waters

Project Budget: \$164,000

Project Manager Information

Name: Diana Karwan

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

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Project Reporting

Date Work Plan Approved by LCCMR: September 10, 2024

Reporting Schedule: March 1 / September 1 of each year.

Project Completion: June 30, 2025

Final Report Due Date: August 14, 2025

Legal Information

Legal Citation: M.L. 2022, Chp. 94, Sec. 2, Subd. 20b-1

Appropriation Language: (b) The remainder of the unencumbered amount in Laws 2018, chapter 214, section 2, subdivision 9, paragraph (d), not transferred under paragraph (a), clause (3), estimated to be \$202,000, is transferred to an emerging issues account authorized in Minnesota Statutes, section 116P.08, subdivision 4, paragraph (d).

Appropriation End Date: June 30, 2025

Narrative

Project Summary: Watershed knowledge will be compiled to predict and evaluate how far and how fast CWD might move through watersheds and serve as a source

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Chronic Wasting Disease (CWD) is a fatal disease of deer and elk which has been found on farms and in wild herds in Minnesota and 32 other states. CWD agents, called prions, can survive for long periods of time outside of animals. Current efforts mainly focus on disease detection, transmission, and movement between animals. The detection and movement of CWD in the environment, outside of deer, remains far less understood. Recent findings from our group indicate that CWD prions associate with fine sediments suspended in water and are detectable on sediments eroding from land in two distinct Minnesota regions. Specifically, sediments were found downstream of cervid farms with known CWD infections after the farms had been depopulated. In many areas of Minnesota, soils erode from the landscape and move to receiving waterways. This proposed project combines CWD environmental detection with watershed knowledge to predict and evaluate how far and how fast CWD might move through watersheds, outside of deer. Movement through water could spread CWD prions from known hotspots of contamination hence placing more deer in wild herds at risk. Evaluation of the movement of CWD through water to downstream areas requires collaboration of both veterinary and water scientists.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

This is an Emerging Issues Request. We will evaluate the movement of CWD in streams and rivers as an emerging contaminant associated with fine sediment. The project team seeks to build on and integrate two bodies of distinct work, one in wildlife disease and the other in water resources, to assess and communicate the risk of CWD moving through Minnesota's waterways. Previous work identified water flows from CWD landscape hotspots to the Red River of the North, including Red Lake, as well as the Upper and Lower Mississippi River Basins. Individual watershed plans and existing river network information will be examined, reviewed, and synthesized for predictions of fine sediment movement. A sampling plan will be constructed taking into account watershed networks and fine sediment transport from regions shown to be effected by CWD, focused on cervid farms.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

We will produce a report containing (1) summarized sediment transport information from watersheds and regions in Minnesota containing CWD-positive cervid farms and (2) a sampling plan identifying areas of aquatic sediments to be collected and evaluated for CWD. The sampling plan will serve as an input for the linked project LCCMR 2025-323. Furthermore, this report will illustrate the anticipated space and time for CWD prion travel in waterways, focused on those draining from known positive cervid farms.

Project Location

What is the best scale for describing where your work will take place?

Region(s): Central, NW, SE,

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Predictive estimation of prion transport through Minnesota waterways

Activity Budget: \$164,000

Activity Description:

We propose to compile known information about stream and river sediment transport in two distinct regions of Minnesota where we have preliminary evidence for CWD being transported from hotspots on sediments. Work under Activity One leverages hydrologic analysis and known sediment transport dynamics, with emphasis on fines/silts/clays/organics to inform locations in surface water pathways where fine sediments, such as eroded soils, might get stored on their way down stream to receiving water bodies. This information will be compiled from existing information (agency reports, results of prior modeling studies that can give a range of sediment transport parameters) focusing on two regions centered on known CWD contamination. Upon synthesis, we will produce locations likely to receive CWD contamination focusing on waterways. This will serve as targeted sampling locations under Milestone 3 of this Emerging Issues project as well as the associated Phase 2 project. Throughout, the project team will communicate via reports, presentations, and meetings with agencies and groups involved in management of targeted watersheds and statewide (e.g. tribal communities in the focal watersheds, MPCA, MN DNR, watershed districts). Throughout the duration of this project, project staff will present results to interested groups and at state conferences.

Activity Milestones:

Description	Approximate Completion Date
1. Compiled report of fine sediment movement predictions based on published literature and agency reports	May 31, 2025
2. Report of target sample locations for use in milestone 3 and Phase 2	June 30, 2025
3. Spring condition samples collected and archived for analysis under Phase 2 of this project	June 30, 2025
4. Communicate via reports, presentations, and meetings with interested groups	June 30, 2025

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Dr. Tiffany Wolf	University of Minnesota	Co-PI	Yes
Dr. Stuart Lichtenberg	University of Minnesota	Co-PI	Yes

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

Communication of results will be done through multiple channels to both the wildlife and watershed management communities. We will leverage MNPRO networks to provide informational material to state natural resource managers. Additional presentations will be made at state conferences targeting managers, such as the Minnesota Water Resources Conference as well as through meeting attendance and targeted conversations with state and tribal natural resource management agencies. Credit will be given to the Environment and Natural Resources Trust Fund through attribution language in oral presentations and with attribution language and logo on printed and visual slides per the ENRTF Acknowledgement Guidelines.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?

Information gathered, described above, will continue to be publicly available.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Senior Personnel / PI and Co-PI		Lead science, manage project, supervise and design review, lab, and fieldwork			36%	0.05		\$21,113
Research and Outreach Staff - P&A		Conduct literature review, conduct and advise field sampling. Meet with communities to discuss findings			36%	0.4		\$46,155
Graduate Students		University of Minnesota Graduate Students contributing to all aspects of research; fringe includes tuition			63%	0.5		\$87,847
							Sub Total	\$155,115
Contracts and Services								
							Sub Total	-
Equipment, Tools, and Supplies								
	Tools and Supplies	Consumable supplies and disposable PPE for one season of field sampling	Consumable supplies and equipment needed for field and laboratory work compliant with prion sampling protocols (e.g. chemical reagents, sampling and storage supplies such as bags, bottles, PPE including tyvek, gloves, waders for stream sampling)					\$3,885
							Sub Total	\$3,885
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								

							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	Approximately 1 trip will be conducted (e.g. near cities of Bemidji and Winona). At this time, team will collect samples and meet with relevant local groups. 3-5 team members will travel for 3 nights each time.	Approximately 1 trip/year will be conducted for sample collection in effected areas of the state (e.g. near cities of Bemidji and Winona). At this time, team will collect samples and meet with relevant local groups. Meeting participation with agency staff will also take place in person.					\$5,000
							Sub Total	\$5,000
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
							Sub Total	-
Other Expenses								
							Sub Total	-
							Grand Total	\$164,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount
State				
			State Sub Total	-
Non-State				
			Non State Sub Total	-
			Funds Total	-

Attachments

Required Attachments

Visual Component

File: [f754812c-f97.pdf](#)

Alternate Text for Visual Component

Map showing the hypothetical flow of CWD prions through Minnesota watersheds if they were to enter the stream network from depopulated CWD-positive farms. This is based on the watersheds containing farms and the next 10 watersheds downstream. The proposed project aims to add possible travel times to such distances....

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

I have worked with staff to make the emerging issues portion the first year / activity 1 from 2025-323. As of August 30, I responded to staff comments due on Sept 1.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I agree to the Commissioner's Plan.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

Yes

Does the organization have a fiscal agent for this project?

No