

Research Need Statement 578

I. Need Statement Author and Information

I.A. Need Statement Champion Information

- I.A.1. First and Last Name of Research Champion: **Wayne Sandberg**
- I.A.2. Research Champion's Office: **Washington County Deputy Director PW**
- I.A.3. Research Champion's Phone Number: **651-430-4339**
- I.A.4. Research Champion's Email: wayne.sandberg@co.washington.mn.us

I.B. Research Co-Champion

- I.A.1. First and Last Name of Research Co-Champion: **Chris Smith**
- I.A.2. Research Co-Champion's Office: **MnDOT OES**
- I.A.3. Research Co-Champion's Phone Number: **651-366-3605**
- I.A.4. Research Co-Champion's Email: Christopher.E.Smith@state.mn.us

I.C. Research Needs Title (115 Characters): **Vegetation management practices to enhance roadside pollinator habitat**

I.D. Project Sponsor: Joint MnDOT and Local Road Research Board

II. Research Need Background and Description

II.A. Research Need Background

II.A.1. Describe the problem or opportunity. Pollinators such as native bees, including the federally-endangered rusty-patch bumble bee (*Bombus affinis*), and Monarch butterflies are at risk due to the loss of native habitats from increasing development, intensive agricultural practices, and greater use of pesticides. Roadside habitats, in particular, have grown in importance as they can provide habitat and act as migratory corridors.

II.A.2. If applicable, describe how this project will build on previous research. Interest in pollinator species has been the subject of substantial research in recent years. FHWA has produced guidance on best management practices for roadside management to support pollinator species. Previous research by the University of Minnesota developed an occupancy modeling technique to evaluate the usage of roadsides by bumblebees. (MnDOT Report 2019-25 below).

II.A.3. If applicable, include the title/s or previous research.

MnDOT/LRRB research

Monitoring and Habitat Assessment of Declining Bumble Bees in Roadsides in the Twin Cities Metro Area of Minnesota [MnDOT Research Report 2019-25](#)

Mowing and Haying in the State Trunk Highway Right of Way
<http://www.dot.state.mn.us/govrel/reports/2018/mowing-haying-recommendations.pdf>

Transportation Research Synthesis: Partnerships for Promoting Pollinator Habitat [TRS1601](#)

FHWA research

<https://www.fhwa.dot.gov/publications/publicroads/17sept/01.cfm>

Pollinators and Roadsides: Best Management Practices for Managers and Decision Makers (FHWA-HEP-16-020)

https://www.environment.fhwa.dot.gov/env_topics/ecosystems/Pollinators_Roadsides/BMPs_pollinators_roadides.aspx

Roadside Best Management Practices that Benefit Pollinators: Handbook for Supporting Pollinators through Roadside Maintenance and Landscape Design (FHWA-HEP-16-059)

https://www.environment.fhwa.dot.gov/env_topics/ecosystems/Pollinators_Roadsides/BMPs_pollinators_landscapes.pdf

TRB Research

Pollinator Habitat Conservation Along Roadways [NCHRP 25-59](#)

II.A.4. What is the **objective** of the proposed research?

The objective of this project is to identify cost-effective roadside vegetation installation and management techniques to provide habitat for the rusty-patched bumble bee and other declining pollinators. Improved roadside maintenance practices to be considered include:

- Vegetation establishment and enhancement practices (for example, seeding and over seeding techniques, watering, timing), on a variety of soil types for the rusty-patched bumble bee in areas next to known sightings and within U.S. Fish and Wildlife Service Identified high potential zones utilizing the Minnesota Land Cover Classification System.
- Evaluation of seed mix composition, seeding rates, and fertilization rates
- Timing of mowing and haying, and its impact on the rusty-patched bumble bee and Monarch butterfly (for example, alternate years, half of the ROW, etc.)

Develop training to disseminate the research findings and revised best practices to roadside vegetation managers through workshops, conferences and/or webinars.

III. Strategic Priorities, Benefits, and Expected Outcomes

Section III. is for MnDOT sponsored and co-sponsored projects only; all LRRB projects proceed to section IV.

III.A. MnDOT Strategic Priorities

Instructions: Briefly describe how the project aligns with the following MnDOT Research Strategic Priorities. Complete all that apply.

III.A.1. Innovation & Future Needs:

III.A.2. Advancing Equity:

III.A.3. Asset Management: **Manage roadside right-of-way to provide needed safety plus beneficial pollinator habitat with the potential for maintenance cost savings.**

III.A.4. Safety:

III.A.5 Climate Change & Environment: **Promote use of roadside for pollinator habitats and potential migratory corridors**

III.B. Expected Outcomes

Instructions: Check all expected direct outcomes of this research.

- New or improved technical standard, plan, or specification
- New or improved manual, handbook, guidelines, or training
- New or improved policy, rules, or regulations
- New or improved business practices, procedure, or process
- New or improved tool or equipment
- New or improved decision support tool, simulation, or model/algorithm (software)
- Evaluation of a new commercial product
- New or improved technical standard, plan, or specification
- Other. Please specify below:

III.C. Expected Benefits

Instructions: Select all expected benefits that may be realized if the findings and recommendations from this research is adopted or implemented

III.C.1. Construction Savings Choose an item.

III.C.2. Decrease Engineering/Administrative Costs Choose an item.

III.C.3. Environmental Aspects Other environmental impact. Please describe below.

Establish roadside vegetation management recommendations to improve habitat for pollinator species including the rusty-patched bumble bee and monarch butterfly.

III.C.4. MnDOT Policy Changed or inform a policy

III.C.5. Lifecycle Choose an item.

III.C.6. Operations and Maintenance Savings Choose an item.

Potential for Reduced costs due to changes in vegetation management practices (i.e. mowing, herbicide use, etc...) of highway right of ways

III.C.7. Reduce Risk Choose an item.

III.C.8. Reduce Road User Cost Choose an item.

III.C.9. Safety Choose an item.

III.C.10. Technology Choose an item.

III.C.11. Other, please describe below:

IV. Technical Advisory Panel

Instructions: Please list the name and affiliation of individuals to consider for the Technical Advisory Panel.

Wayne Sandberg, Washington County
Dan McSwain, Washington County Natural Coordinator
Rosemary Lavin, Hennepin County Scientist
Sue Miller, Freeborn County
Guy Kohlenhofer, Dodge County
Mike Leeg, Operations Manager Carver County
Christopher Smith – OES
Beth Brown - OES
Tina Markeson – OES
Ken Graeve – OES
Dan Shaw - BWSR
Rick Erpelding – DNR (Rochester native prairie grasses)
George Howe - Winona County Parks and Environment Committee Chair
Dave Kramer - Winona County Engineer
Minnesota's Roadsides for Wildlife program
MnDOT maintenance staff person

Your assigned Project Advisor is available to answer questions and provide guidance (assigned by the Office of Research & Innovation).

Your Project Advisor is: Beth Klemann phone: (651)366-3771 email: beth.klemann@state.mn.us