Oregon Department of Transportation

Research Stage 1 Problem Statement

Number 26-05 – "Evaluating Mowing Practices for Pollinator Habitat Enhancement: A Study on Highway Vegetation Management and Its Impact on Endangered Pollinators"

1. Concisely describe the **transportation issue** (including problems, improvements, or untested solutions) that Oregon needs to research.

Pollinator protection has increasingly become a state and federal issue when it comes to vegetation management associated with highways. At the federal level a 2014 Presidential Memorandum direct the U.S. Department of Transportation to work with State Departments of Transportation (DOTs) and transportation associations to promote pollinator-friendly practices and corridors. Moreover, the federal Endangered Species Act (ESA) restricts ODOT from disrupting the habitat of listed pollinating insects and requires ODOT to manage Special Management Areas for this habitat. More recently ODOT is part of a Nationwide Candidate Conservation Agreement for the Monarch Butterfly (*Danaus plexippus*) *Danaus plexippus*). At a state level, a Pollinator Health Task Force has required a safety plan be developed for bees. Annually ODOT mows 20,000 acres, but it is unclear if the current mowing patterns enhance the density of late-season blooming plants that are of importance to rare, threatened or endangered butterflies and bees. Being able to identify mowing practices that encourage these plants may help meet pollinator protection targets without increasing maintenance costs.

2. What **final product or information** needs to be produced to enable this research to be implemented?

This work will build on an initial Willamette Valley pilot conducted by Will Lackey (Vegetation Management Coordinator, ODOT) and Dr. Andony Melathopoulos (OSU Pollinator Health) documenting the diversity and abundance of bee and butterfly attractive plants at different four different sites one month after mowing. The concept is that if the team could inventory enough representative sites around the state, they could model how mowing history, region and other biogeographic factors predict the plant community and provide recommendations on the optimal mowing cycle to encourage the plants that most benefit pollinating insects. Moreover, with such a model, ODOT could use mowing history and biogeographic parameters to estimate the acres of pollinator habitat they are enhancing. Oregon State houses the largest bee plant database, which could then be compared to the model to predict the number of bee species supported by highways at different regions of the state. This would ultimately enable ODOT to provide rapid reporting on how it is enhancing pollinator habitat for current and future Nationwide Candidate Conservation Agreements. This information could also be translated into specific recommendations to vegetation management staff on regionally specific guides on the frequency and timing of mowing to encourage the plants that support rare, threatened and endangered pollinating insect species. Finally, the project would result in a pocket guide to the most important plants for pollinators that vegetation management crews will encounter. This information could also be used to modify seed blends to include the beneficial plant species.

3. (Optional) Are there any individuals in Oregon who will be instrumental to the success of implementing any solution that is identified by this research? If so, please list them below.

Name	Title	Email	Phone
Will Lackey	Statewide Vegetation Management Coordinator (ODOT)	William.LACKEY@odot.oregon.gov	503 508-3549
Andony Melathopoulos	Pollinator Health Extension Specialist (OSU)	Andony.Melathopoulos@oregonstate.edu	541 452-3038

4. Decision making lenses

Please complete the following three sections. Your answers to these questions will be applied on a programmatic basis to support agency decisions. Answering yes to the questions below is not required. Resolving a narrowly focused technical research problem may meet agency needs without answering yes to any of the following questions. The ODOT Research Section will seek a balanced portfolio some projects will answer yes to one of the three categories below (e.g. climate, equity, and/ or safety) and other projects in a different category.

We are looking for an overall program balance and no one project is expected to balance all categories. Generally, a research problem statement is expected to be able to answer yes with clear and verifiable information in only one of the three categories below, some projects may be able to answer yes in two or even three categories. Some projects (i.e. needs focused on specific elements of infrastructure design), may have no yes answers but may still be high value research need.

Climate

Oregon recognizes the climate crisis and makes systemic changes to reduce emissions caused by travel. Every mile driven in Oregon is powered by a clean source of fuel. We seek research that supports construction and maintenance operations are carbon neutral and investments in mobility that support travel by low and no emission modes. While every research project may not result in a reduction in emissions, transportation investments overall support emission reductions to achieve state goals. Oregon envisions a transportation system that is resilient in the face of seismic and climate events and impacts to the degradation of the natural environment are reduced. Our vision includes a transportation infrastructure is built in a way that avoids impacts on key habitat and results in better environmental conditions for wildlife and native vegetation. For definitions and details please review the equity vision, goals, and objectives of the ODOT Strategic Action Plan and Oregon Transportation Plan.

4f. Will addressing the **transportation issue** identified as a need in Question 1 develop, or validate methods for the estimation, measurement, or monitoring of transportation generated greenhouse gasses (GHG)?

☐Yes ☒No ☐Unsure

4g. If climate or GHG is not the focus of this **transportation issue** identified in this problem statement, will the research apply a GHG analysis to transportation infrastructure, planning, operations, maintenance, or materials?

☐Yes ☒No ☐Unsure

4h. Will the addressing the **transportation issue** include development or testing of construction practices, methods, or materials to establish potential reductions in greenhouse gas emissions?

☐Yes ☒No ☐Unsure

4i. Will the solving the **transportation issue** in question 1 study or support the reduction of vehicle miles traveled and single occupancy vehicle travel or support transition to electric vehicles (or other types of zero emission vehicles) or low-carbon alternative fuels?

☐Yes ☒No ☐Unsure

4j. Will the solving the **transportation issue** in question 1 lead to work that will support, measure, monitor, transportation system resilience in response to expected climate events, effects, or natural disasters in general?

☐Yes ☒No ☐Unsure

4k. Will the solving the **transportation issue** in question 1 lead to work that may result in better environmental conditions for wildlife and native vegetation?

☒Yes ☐No ☐Unsure

4l. If you answered yes to any of the climate questions above or can provide alternative details related to climate, please provide additional information:

The research focuses on improving pollinator habitat in ODOT right of way, which may benefit habitat suitability and food access for pollinators, including threatened or endangered species.

Equity

Equity can have many dimensions and impacts relating to communities, and transportation. It is important that problem statement proposals clearly explain in what capacities are equity dimensions or impacts being examined within problem statements. It is a goal of the OTP to "Improve access to safe and affordable transportation for all, recognizing the unmet mobility needs of people who have been systemically excluded and underserved. Create an equitable and transparent engagement and communications decision-making structure that builds public trust". Proposed research may have the intent of studying elements of this goal or apply analysis to specific transportation topics to ensure the resulting research recommendations is consistent with our equity goals. For definitions and details please review the equity vision, goals, and objectives of the ODOT Strategic Action Plan and Oregon Transportation Plan.

4a Is the **transportation issue** identified as a need in Question 1 specifically focused on transportation equity?

☐Yes ☒No ☐Unsure

4b If the **transportation issue** is not focused on transportation equity, will the primary topic be assessed for equity benefits or impacts within the research project?

☐Yes ☒No ☐Unsure

4c Is the implementation of potential findings from this research likely to directly involve participation from an identified group that would benefit from an equitable process or outcome?

☐Yes ☒No ☐Unsure

4d Is the intended final product or information expected to support ODOT's equity efforts (Including but not limited to supporting one of the equity related objectives of the ODOT's Strategic Action Plan or Oregon Transportation Plan) ?

☐Yes ☒No ☐Unsure

4e If you answered yes to any of the equity questions above or can provide alternative details related to equity, please provide additional information:

Safety

Research outcomes may include interventions and countermeasures to prevent or reduce the frequency of crashes or other causes of transportation-related injury or death; or may include measures to reduce severity of injury (including prevention of death) after a crash or other injurious event. For definitions and details please review the equity vision, goals, and objectives of the ODOT Strategic Action Plan, Oregon Transportation Safety Action Plan and Oregon Transportation Plan.

4m. Will solving the **transportation issue** in question 1 support improving **safety culture** for either transportation workers or the traveling public?

☐Yes ☒No ☐Unsure

4n. Will the solving the **transportation issue** support improving safety through **healthy and livable communities**?

☒Yes ☐No ☐Unsure

4o. Will solving the **transportation issue** support improving safety through using **best available technologies**?

☐Yes ☒No ☐Unsure

4p. Will solving the **transportation issue** support improving safety through **communication and collaboration**?

☐Yes ☒No ☐Unsure

4q. Will the solving the **transportation issue** support improving safety through **investing strategically**?

☐Yes ☒No ☐Unsure

4r. If you answered yes to any of the safety questions above or can provide alternative details related to safety, please provide additional information:

Enhancing pollinator habitat across the state may benefit community food production and may also improve aesthetics during periods of bloom for some plant species.

5. Other comments:

There are wildlife resilience benefits to pollinator communities, including species, such as the Monarch butterfly, that are currently struggling to thrive. Climate change and land use changes are challenging pollinator survival nation-wide. At least 20,000 acres of public right of way in Oregon can be leveraged to improve late-season food and quality habitat. Improvements to seasonal vegetation access may provide co-benefits to other wildlife.

6. Corresponding Submitter's Contact Information:

Name:	Will Lackey
Title:	Statewide Vegetation Management Program Coordinator
Affiliation:	Oregon Department of Transportation
Telephone:	(503)508-3549
Email:	William.lackey@odot.oregon.gov

This form is not a grant application or contract document.