**Ohio Department of Transportation**  
**Office of Statewide Planning & Research**  
**Research Section**  
**Research Request for Proposal**  
**Fiscal Year 2019**

**RFP Solicitation Number: 2019-14**

**Research Title:** Evaluate and Develop Post-Construction Groundcover that Meets Erosion and Sediment Goals and is Beneficial to Pollinators

**Problem Statement**
The monarch butterfly is arguably one of the most iconic and popular butterflies in North America. Its annual multigenerational migration is considered one of the most spectacular natural phenomena on the planet. Unfortunately, estimates from the overwintering colonies in Mexico have documented a steady population decline over the past few decades and prompted a petition to list the butterfly as threatened under the Endangered Species Act. Much attention has focused on the loss of breeding habitat, with recent estimates indicating that 1.8 billion milkweed stems nationwide would be needed to return monarch populations to a more viable size. The Presidential Memorandum — Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators and the resulting Pollinator Research Action Plan specifically identify roadsides as priority areas where habitat could be expanded. In response, ODOT has identified, and is currently implementing proactive strategies designed to stabilize and ultimately reverse this population collapse, including converting existing right-of-way to roadside pollinator habitats. Unfortunately, conversion requires significant site preparation to control weed pressure including at least three applications of herbicides spanning up to two calendar years.

Some native wildflowers, grasses, and legumes can thrive in poor and compacted soils, are salt-tolerant, and have extensive root systems that range from 5 to 15 feet, lending themselves to being an inexpensive and ideal solution to soil erosion, slips, and slides. By directly seeding new construction projects with pollinator-beneficial wildflowers, native grasses, and legumes, ODOT could 1) Establish hundreds of acres of new pollinator habitat each year benefiting species like the monarch butterfly, the honeybee, and the rusty patched bumble bee, 2) Reduce roadside maintenance costs through mowing and herbicide reduction, and 3) Meet or exceed storm water runoff requirements by creating vegetative bio-filters.

The Ohio Department of Transportation (ODOT) is seeking to create a specification to supplement, or more preferred to replace current post-construction groundcover (Kentucky bluegrass, tall and fine fescue, annual and perennial ryegrass, and the legume crown vetch) with pollinator-beneficial wildflowers, native grasses, and legumes.

**Goals and Objectives**
- Identify potential post-construction pollinator beneficial groundcover that will:
  - Be comparable in cost to existing post construction groundcover
  - Meet the Ohio EPA’s requirement to have 70 percent coverage within six months of seeding
  - Reduce ODOT’s roadside maintenance costs through mowing and herbicide reduction
  - Include a mix of Ohio native forbs and grasses
  - Not obstruct motorists’ line of sight
Select the best methods of planting and maintaining the groundcover to address weed pressure and woody vegetation
Select environmentally sound materials and procedures that are compliant with EPA rules

Proposed Research
The objective of this research is to conduct an in-depth analysis of ODOT’s current post construction groundcover and provide recommended specifications for native, pollinator beneficial groundcover that are cost effective, conservation minded, and readily available in order to update ODOT’s Construction and Material Specification book. The primary objective of this research is to find Ohio native grasses and forbs that can thrive in poor and compacted soils, are highly salt tolerant, provide sediment and erosion control following ground disturbances from construction projects, filter storm water runoff, provide food and nesting habitat to pollinators which will increase their populations, and are aesthetically pleasing.

The analysis should, at a minimum, include the following items:

- To accomplish this research, the scope of work should be divided into two phases. Phase 2 is contingent upon successful completion of Phase 1 and written authorization from ODOT’s Research Program. The scope of work should include, at a minimum, the activities noted below. Additional tasks may be included in the proposal by the research team as appropriate to ensure achievement of research objectives.

- Proposals should be developed for Phase 1 only. Preliminary information on potential Phase 2 activities is being provided so that researchers may gain insight into the expected final deliverable of this research and focus Phase 1 work accordingly.

Phase 1
1) Evaluate current ODOT post construction groundcover
2) Complete an extensive literature search and develop a matrix of alternatives that will compare and contrast solutions that are available today and provide a recommendation on the most viable solution(s). Include processes by other state DOT’s with similar vegetative and roadway conditions and climate to Ohio. Comparison should include, but are not limited to, cost/benefit analysis, Ohio EPA requirements, and installation and maintenance methods.
3) Provide an interim report detailing the findings from steps 1 and 2. Recommend solutions for in-field analysis. Solutions may include the utilization of a combination of equipment, chemical treatments, and planting modifications or focus on one area in particular as supported by the analysis. Recommendations should be presented in the form of a comprehensive matrix taking into account all items involved in the analysis. Interim report is due within four months of the project start date. A meeting will be scheduled to review the interim report and discuss recommendations for Phase

Phase 2
If Phase 2 is authorized, the researcher will be asked to develop a proposal for the approved solutions and an addendum to the contract will be issued by the Research Section. The proposal must include a comprehensive scope of work for field trials, updated project schedule, budget, and deliverables. If Phase 2 is not authorized, the interim report will serve as the draft final report for this project. Comments on the report will be provided to the researcher for incorporation and publication as a final report.

1) Perform in-field analysis of approved solutions from Phase 1. A total of two years should be allotted for field analysis. Year 1 consists of implementing recommendations into the field at site locations as approved by ODOT, development of baseline, and start of data collection. Year 2 consists of data collection and analysis of project objectives.

2) Prepare a comprehensive final report documenting the findings and performance of in-field testing.
**Requirements of the Research Team**
This research is seen as a multifaceted team approach. The project may benefit from including a botanist, an herbicide expert, horticulturalist, and an expert with extensive experience and knowledge of Ohio EPA stormwater requirements. Expertise with right of way planting, roadside herbicide application and general roadside vegetation management is also ideal.

**Assistance from ODOT**
ODOT will provide input and assistance to the researchers as needed from:
- ODOT Office of Environmental Services
- ODOT Division of Construction Management
- ODOT Office of Maintenance Operations

**Project Specific Deliverables**
- Provide ODOT with draft list of pollinator beneficial groundcover that includes:
  - Species
  - Planting rates
  - Ideal location for planting (slopes, infields, roadsides, adjacent to waterways, geographic regions in Ohio, etc.)
  - Recommended planting methods, including mulch, equipment, soil amendments, planting timeline, etc.
  - Recommended maintenance methods, including mechanical and chemical treatments, maintenance timelines, etc.

**Research Contract Deliverables**
- Quarterly Progress Reports (due one month after each quarter ending date)
- Electronic Word version of the draft final report and draft fact sheet shall be submitted 120 days prior to the contract completion date;
- PDF and MS Word version for both documents shall be submitted by the contract completion date;
- An article for the Research newsletter (to be provided upon request); and
- Participation in the following meetings: project start-up, research review sessions, monthly meetings as requested, and research results presentation (if requested)

**Benefits**
The US Fish and Wildlife Service will decide in June 2019 whether to list the monarch butterfly as a threatened endangered species under the Endangered Species Act. If so, ODOT may be required to apply for a “Take Permit” in order to perform mowing and other maintenance activities costing the Department time and money. By adding pollinator beneficial groundcover to new construction projects, in addition to the Department’s current conversion activities, ODOT will help reconnect habitats across the state that have been fragmented by mono agriculture and development and potentially prevent the listing of this species.

ODOT is seeking to find Ohio native grasses and forbs that can thrive in poor and compacted soils, are highly salt tolerant, prevent erosion following construction, filter storm water runoff, provide food and nesting habitat to pollinators which will increase their populations, and are aesthetically pleasing.

By naturalizing ODOT’s rights of way with pollinator beneficial groundcover, the Department will reduce roadside maintenance costs through mowing and herbicide reduction.
Preliminary Literature Search Results


Duration

6 months (for Phase 1 only)

An interim report should be submitted for consideration no later than 4 months following the contract start date. A meeting between ODOT and the research team will be scheduled within 3 weeks of submission of the interim report to discuss in detail the findings and recommendations for Phase 2.

If Phase 2 is authorized, ODOT will negotiate the scope and proposed budget provided with the interim report as necessary and proceed as appropriate.

If Phase 2 is not authorized, ODOT will provide the researcher with feedback on the interim report as through it were the draft final report. A draft executive summary will be requested for review. The research team will use the remaining time to modify and publish the report as instructed by the Research Section.

Specific Assurances with Respect to Federally-Assisted Projects

The Ohio Department of Transportation in accordance with Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, all bidders including disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, sex, age, disability, low-income status, or limited English proficiency in consideration for an award.