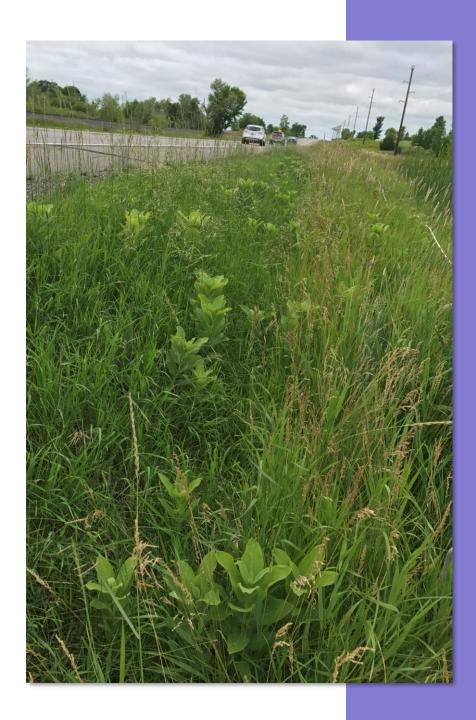
Roadside Habitat Suitability

Laura Lukens, Monarch Joint Venture





Roadside Conservation Value

- Monarch habitat already exists in roadsides
- Pollinators are using it
- ROW corridors connect habitat
- ROWs needed to reach habitat targets
- Benefits outweigh risks (in most cases)



Sources: Kasten et al., 2016; Thogmartin et al., 2017; Daniels et al., 2018; Cariveau et al., 2019; Phillips et al., 2020; McLaughlin et al., 2020; McCoshum & Agrawal, 2021; more...



Roadside Habitat Risks

- Vehicle collisions
- Noise
- Light pollution
- Pollutants: salt, heavy metals, pesticides
- Management (e.g., mowing)



Sources: Snell-Rood et al., 2014; Mitchell et al., 2020; Keilsohn et al., 2018; Kantola et al., 2019; Mora Alvarez et al., 2019; Phillips et al., 2021; more...



How can we mitigate risk?

Roundtables with experts & DOT representatives:

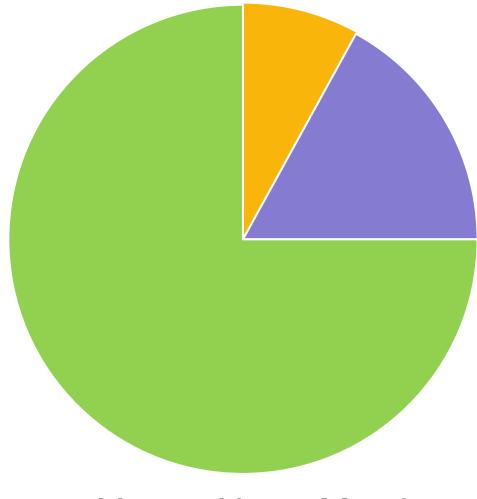
- Oct 2021 Began exploring current state of science and potential resources
- Jan-Feb 2023 Continued discussion, two roundtable meetings with 3 objectives:
 - 1. Understand current state of knowledge on monarch roadside mortality
 - 2. Determine if existing research is sufficient to provide recommendations for mitigating risk
 - 3. Identify who and what would be needed to identify BMPs







Is the existing research sufficient to generate recommendations for mitigating roadside mortality risk?



Yes No Mostly

n = 12 responses*

*Researchers, subject matter experts, and DOT representatives





Photo: L Lukens / Monarch Joint Venture

Considerations Discussed

- Habitat distance from road edge
- Road type (traffic volume, speed, size, medians)
- Adjacent land use
- Habitat composition (width, vegetation)
- Management type & timing





Photo: Jen Thieme / Monarch Joint Venture

Takeaways

- In many places, research is still largely inconclusive
- Start with basic recommendations where we can (e.g., distance from road edge – safety zone)
- Recommendations can't be the same everywhere
- Need to be adaptive & alter as we learn more



Next steps...

- Subgroup meetings
- Deliverables
 - -Concise fact sheet Roadside Habitat Conservation Value
 - -Longer literature review summary
 - —Updated Mowing Timing & BMP Handout
- Longer term: Regional practical guidance & BMPs, facilitate data sharing, track research opportunities



Key Resources

- Updated Monarchs & Roadsides FAQs
- Literature review summary
- Mowing timing & guidelines
- ROWHWG Resource Library
- Xerces Society Publications Library
- Handbook: Roadside BMPs that Benefit Pollinators

Mowing and Management: Best Practices for Monarchs

erstanding when monarchs are present allows land managers to time management practices like ving, grazing, or targeted pesticide application when they are least likel on milkweed plants or adult monarchs seeking



Roadside Best Management **Practices that Benefit** Pollinators

Handbook for Supporting Pollinators through Roadside Maintenance and Landscape Design



Frequently Asked Questions: Monarchs & Roadsides ADSIDE HABIT FOR MONARCHS Overvie Education Monarchs Butterflies and Roadsides Habitat How does roadside vegetation support monarchs Science Milkweed on roadsides is readily used by adult monarchs who seek out milkweed stems and leaves to lay Monarch Research their eggs on and nectar on milkweed flowers. Monarch larvae, or caterpillars, eat the leaves of many different species of milkweeds that grow in roadside areas. Roadsides can also provide diverse nectar Integrated Monarch sources which fuel adult flight, breeding, migration, and overwintering. Furthermore, roadside habitats ma Monitoring Program serve as important habitat corridors, can provide millions of acres of monarch habitat nationwide, and can Remote Sensing Program be especially important in areas devoid of natural habitat (e.g., agriculture and cities). Sources: Kasten et al., Roadside Habitat for 2016; Pitman et al., 2018; Cariveau et al., 2019; Kaul & Wilsey, 2019; Schact & Wu-Smart, 2019; Grant et al. Monarchs Landscap

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Prioritization Mode

Habitat Evaluator

Best Management

Practices: Resources

Which types of roadside vegetation support monarchs

sources Ry Type

2020

Adult monarchs feed on nectar from a variety of blooming plants, including wildflowers and shrubs, whil caterpillars feed on milkweed plants. Roadsides with diverse, flowering vegetation provide habitat for monarchs during their breeding and migration periods. For example, fall-blooming flowers can be especially important to migrating monarchs, which need large quantities of nectar to generate the fat reserves that enable them to complete their long-distance migration to overwintering grounds and surviv winter. Sources: Cariveau et al., 2019: Western Monarch Milkweed Mapper, 2019: Schact & Wu-Smart, 2019

MONARCH JOINT VENTURE



This online library is a clearinghouse of tools and information related to habitat on rights-of-way and other lands. From seed mix calculators to mowing guidelines and everything in between, you'll find it here.

Roundtable Experts, DOT Reps, & Collaborators:

Bob Coulson, Texas A&M University Caroline Hernandez, UIC Energy Resources Center Catherine Liller, USFWS Chris Smith, Minnestoa DOT Dan Salas, Cardno/Stantec Emilie Snell-Rood, University of Minnesota Glenn Gingras, Vermont DOT Iris Caldwell, UIC Energy Resources Center James Tracy, Texas A&M University Jennifer Hopwood, Xerces Society Katy Prudic, University of Arizona

Kris Gade, Arizona DOT Kristen Baum, Oklahoma State University Kristine Nemec, Tallgrass Prairie Center Laura Lukens, Monarch Joint Venture Luz Quinnell, CalTrans Mercy Manzanares, Monarch Joint Venture Rebeca Quinonez-Pinon, National Wildlife Federation Sam Glinsky, Texas DOT Sean Sweeney, USFWS Tegha Obire, UIC Energy Resources Center Vonceil Harmon, Oklahoma DOT



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