

Michigan Department of Transportation

Pollinator Habitat Management Program



The Michigan Department of Transportation has developed a habitat management plan to protect pollinators and their habitats in rights of way in response to pollinator population decline.



MDOT Pollinator Habitat Management Program

Pollinator populations are in decline worldwide, most notably in insect pollinators. The Michigan Department of Transportation (MDOT) has developed a habitat management plan to protect pollinators and their habitats in rights of way in response to pollinator population decline. By reducing negative impacts on pollinator habitat, improving existing habitat and creating new habitat in our roadsides, we can help pollinators by giving them safe travel corridors, food and shelter. By protecting pollinators, we are helping farmers produce crops and feed livestock, assisting beekeepers by providing a source of food for their bees, and improving wildlife habitat throughout Michigan.

What Are Pollinators?

Pollinators are animals that transfer pollen between flowering plants to fertilize them. There are many different kinds of pollinators in Michigan, including hummingbirds and insects, such as bees, moths, butterflies, and flies. Bees are the most important pollinator in Michigan; these animals rely on flowering plants for food and require these plants to complete their life cycles. By using best management practices that protect and manage roadside pollinator habitat, MDOT is ensuring that these animals will continue to have food, shelter and breeding grounds in the future.



Pollinators Put Food on the Table

When bees and other pollinators forage for food, they spread pollen that fertilizes crops. Thirty percent of all crop production and 90 percent of wild plants rely on pollinators for reproduction. Fruits and vegetables are some of the foods grown in Michigan that are pollinated by honeybees as they search for food and make honey.

Pollinators: What's All the Buzz about?

Over the last decade, there have been rapid and devastating declines in pollinator populations, most notably in bees and butterflies. Human development, climate change, pesticides, herbicides, and the use of neonicotinoids in farming have contributed to this decline by killing the animals directly, destroying their habitat and food sources.

This loss of habitat leads to population decline both directly and indirectly. Habitat loss means the population in the area has no suitable area to live in and leads to direct mortality as populations starve or are left exposed to predation. Indirect habitat loss creates smaller "islands" of suitable habitat surrounded by unsuitable habitat. This creates a barrier to migration, as there are no safe corridors for the animals to use to travel to their overwintering destination as part of their yearly lifecycle. Restricted movement between populations means a decrease in genetic diversity and increased susceptibility to disease. New diseases, molds, fungi and parasite infections are being seen in pollinator populations and are a large factor in their decline.



Federal Guidance Puts Pollinators in the Spotlight

In 2013, President Barack Obama released a Presidential Memorandum creating a federal strategy to promote the health of honeybees and other pollinators. The goal of this federal strategy is to protect and restore domestic populations of pollinators that are critical to the nation's economy, food production, and environmental health.

The Federal Highway Administration (FHWA) supports this concept through vegetation management practices, research, native plantings, invasive species prevention and best management practices. Further FHWA guidance includes the Fixing America's Surface Transportation (FAST) Act of 2015. This act calls for the use of integrated roadside vegetation management practices on roadsides and other rights of way, including reduced mowing and development of habitat and forage for Monarch butterflies, honey bees, and native pollinators through plantings of native grasses and forbs like native milkweed species to create migratory way stations for pollinators.

Why are Roadsides Important for Pollinators?

Roadsides cover an extensive amount of land. In the United States, roads cover 10 million acres. These corridors can facilitate the movement of pollinators and connect patches of suitable habitat together.

Roadsides often have diverse flora that is beneficial for pollinators. Managing these roadside communities prevents the spread of invasive species, filters rainwater and runoff, reduces erosion, and keeps sight lines clear for motorists.

Roadside communities offer a wide variety of vegetation types, including herbaceous, shrub, and tree species, which is important for supporting a healthy pollinator population. The presence of many different species and types of vegetation means the time of their blooming is staggered so pollen and nectar are available all season long.





How is MDOT Helping Pollinators?

MDOT's Integrated Roadside Vegetation Management Program

MDOT utilizes an integrated roadside vegetation management approach that accomplishes dual goals of minimizing cost and promoting environmental health. The integrated roadside vegetation management approach integrates the following to meet these goals:

- The needs of local communities and highway users.
- Knowledge of ecology and natural processes.
- Design, construction and maintenance considerations.
- Monitoring and evaluation.
- Government statutes and regulations.
- The use of cultural, biological, mechanical, and chemical control methods to manage roadsides for safety and environmental and visual quality economically.

MDOT adheres to the guidance provided by the FAST Act in its management approach. This includes reduced mowing (mechanical control), creation of pollinator habitat through plantings of native flowering plants (a type of cultural control), and creation of long and connected stretches of habitat to serve as safe migratory corridors for pollinators. In addition, MDOT does not use insecticides in the rights of way and schedules herbicide application (chemical control) strategically in order to most effectively manage invasive species and promote pollinator habitat health. MDOT also uses biological controls, such as prescribed fires and insects, to combat invasive species.



Reducing Negative Impacts

MDOT's integrated roadside vegetation management approach minimizes costs and promotes environmental health by reducing negative impacts on natural communities within rights of way. This is accomplished by:

Avoiding the use of any insecticides in rights of way. By avoiding the use of these chemicals, MDOT can decrease the amount of direct pollinator deaths.

Scheduling herbicide application strategically to minimize effects on pollinators and maximize control of invasive species. Removal of invasive species in pollinator habitats helps keep roadside habitat healthy pollinator habitat since they prefer native plants.

Reducing mowing to manage clear vision and safety zones. This is cost effective and protects pollinator habitat along roadsides. Scheduling mowing after the blooming period minimizes negative impacts on pollinators by not limiting the availability of pollen and nectar.

Coordinating with adjacent property owners regarding unique management concerns, such as sensitive plant species or organic farms.

County highway departments, township supervisors, utility companies, and adjacent right-of-way landowners, as well as MDOT, utilize this Integrated Roadside Vegetative Management Program.

Habitat Improvement

MDOT coordinates with county road commissions, utility companies, and adjacent landowners to effectively implement this Integrated Roadside Vegetative Management Program.

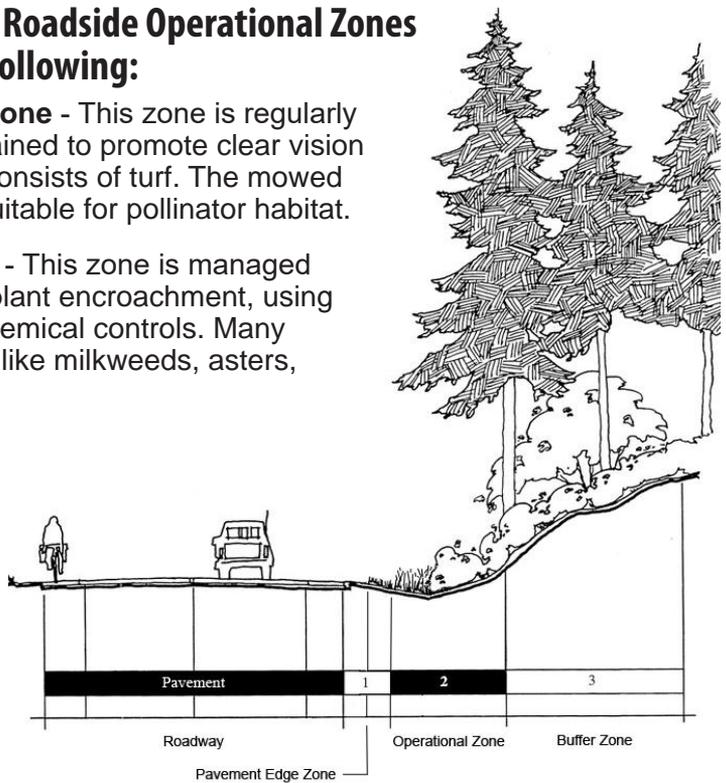
Managing and Maintaining Plant Diversity. Pollinators require diverse communities consisting of a combination of trees, shrubs, and herbaceous flowering plants. Trees and shrubs are often the earliest flowering plants and serve as an early season food source that pollinators depend on to recover hive strength from the harsh winter. Wildflowers and grasses supply food and habitat in the middle to late season so a diverse community provides season-long food and habitat resources for pollinators.

Maintaining the Roadside Operational Zones made up of the following:

Pavement Edge Zone - This zone is regularly mowed and maintained to promote clear vision for motorists and consists of turf. The mowed turf present is unsuitable for pollinator habitat.

Operational Zone - This zone is managed to prevent woody plant encroachment, using mechanical and chemical controls. Many pollinator favorites like milkweeds, asters, lupine, thistles, goldenrods, and small shrubs are numerous here.

Buffer Zone - The existing vegetation and little maintenance needed here contributes to a diverse community of trees, large shrubs, and herbaceous flowering plants. A diverse community such as this has the ability to provide pollinators with season-long supplies of food and habitat.



▲ Image provided by www.wsdot.wa.gov

Leaving Standing Dead Trees on Backslopes if they will not create a safety concern provides shelter for tunnel-nesting pollinators and building materials for nests.

Protect Native Species from Invasive Species and Other Disturbances. Oftentimes when invasive species move in, they push out the native species that specialist pollinators depend on and degrade the habitat. MDOT's Invasive Species Management Program utilizes plant biology and ecology knowledge by employing various methods, such as scheduling herbicide use strategically to have the most effect on the targeted species while minimizing the risk to native plants. MDOT also performs prescribed burns to eradicate invasive species and provide a better site for native wildflower plantings. Use of insects such as beetles that target purple loosestrife are often used for the management of that invasive species in MDOT's mitigated wetland sites.

Protected Areas are habitats in the right of way where threatened or endangered species inhabit. These sensitive species protected from disturbances and habitats are actively managed to ensure their survival and success.

Habitat Creation

Creating new roadside habitat connects previously isolated islands of suitable habitat and creates a safe travel corridor for pollinators. MDOT creates habitat by:

Re-planting Disturbed Right of Way with Native Seed Mixes After Construction

Studies show that native pollinators prefer native flowering plants. MDOT uses an ecosystem approach that considers soil type, hydrology, slope, exposure, and existing vegetation to ensure the establishment of healthy pollinator habitat. By planting a diverse mix of native plants, including herbaceous, shrubs, trees, and groundcover, MDOT is creating suitable habitat that will benefit pollinators by providing a season-long food source, shelter, and host plants to complete their life cycles.



Planting Wildflowers in Rain Gardens and Rest Areas

Besides being aesthetically pleasing, wildflowers improve water quality by preventing runoff and erosion while providing habitat for pollinators.

Planting Living Snow Fences

A combination of trees, shrubs and native grasses provide a green and cost-effective barrier against drifting snow. However, they also provide pollinators with nesting spots and season-long food sources.

MDOT Wetland Mitigation Sites

With approximately 150 sites and 2,000 acres statewide, MDOT's wetland mitigation sites are a haven for pollinators. About 80 percent of these sites contain excellent pollinator habitat and populations due to MDOT's planting plan and emphasis on fostering diverse plant communities.

MDOT, Utility Corridors, and Wildflowers

Utility corridors traverse all types of environments: urban, agricultural, and natural. By establishing dense communities of flowering plants, large linear stretches of pollinator habitat is created and greater habitat connectivity is a result.

Paving the Way to Better Pollinator Health

MDOT is committed to protecting and improving Michigan's roadside pollinator habitat. The department will continue to monitor and adjust current practices to better protect pollinators and their habitat while managing roads effectively and economically. Some pollinator health projects MDOT will be implementing in the coming years include:

- Adding new protected areas to protect sensitive species.
- Developing and incorporating native “pollinator seed mixes” into projects following construction to establish new pollinator habitat.



- Implementing new pollinator special provisions on construction activities.
- Refining the Integrated Roadside Vegetation Management Program to be more effective and efficient.
- Initiating more habitat creation projects.
- Improving invasive species control by incorporating geographic information system (GIS) technology for effective management.
- Forming partnerships with environmental regulatory agencies and tribes to promote best management practices.

**MDOT best management practices for pollinators
were developed in collaboration with:**

MDOT Operations and Field Services

MDOT Environmental Services Section

MDOT Roadside Development Unit

MDOT Regional and TSC Offices

MDOT Maintenance Garages

Federal Highway Administration

U.S. Fish and Wildlife Service

Recognized Tribes in Michigan

U.S. Department of Agriculture

Michigan Department of Natural Resources

Michigan Department of Agriculture and Rural Development



For More Information About MDOT's
Pollinator Habitat Management Program:

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**Providing the highest quality integrated transportation
services for economic benefit and improved quality of life.**