

Mowing for Pollinators

Mowing is frequently used to maintain roadside vegetation, in order to reduce occurrences of invasive weeds and woody plants, improve drivers' sight lines, allow vehicles to pull off, and reduce the risk of wildfires. Typically, vegetation in the recovery area (also known as the *clear zone*—the band of vegetation directly adjacent to the pavement or shoulder where vehicles that have left the roadway can recover) is mowed at regular intervals to keep it short for drivers who need to regain control of their vehicles. Routine mowing within the recovery area creates an environment that is not typically used by pollinators as habitat because it does not support flowering plants or places to shelter. This fact sheet focuses on potential opportunities to support pollinators in established roadside vegetation beyond the recovery area mown strip.

The timing and frequency of mowing can have effects on pollinators and the vegetation they rely on. Mowing practices can be modified to reduce impacts on imperiled pollinators while also maintaining roadside safety and other management objectives. Adapting maintenance practices to support imperiled pollinators involves consideration of the life history of the target species, which may have very specific habitat needs or short windows for breeding activity.

Below we include options for adjusting mowing practices to benefit pollinators; some options will be more appropriate to your region, climate, weed pressure, and transportation agency operational constraints than others.



(Photo: Idaho DOT.)

Reduce the frequency of mowing beyond the mown strip.

Reducing routine mowing of the entire right-of-way (fence to fence) will benefit pollinators by allowing wildflowers to bloom and thereby supply nectar and pollen as food. Mow beyond the mown strip in the recovery area only when there are well-defined objectives, such as reducing brush or maintaining lines of sight. Although most perennial wildflowers will recover from a mowing event, some may not be able to flower and reseed in the same year of a mowing event and thus will not increase their populations. Repeated mowing will eventually reduce or eliminate these wildflowers. Some annuals are sensitive to mowing. If mowed before they bloom, many may be unable to recover in time to bloom at a later date and may subsequently disappear from a site.

Reducing mowing beyond the recovery area to once a growing season is often beneficial for wildflowers and pollinators. In some regions, mowing can be reduced to every other year or even every 2 to 3 years, depending on the intervals of mowing needed to control woody plant encroachment or reinvigorate populations of wildflowers. However, this should be determined within your DOT, based on regional conditions and weed pressure.

Delay mowing until late in the growing season (e.g., mow after the first frost) so blooming plants are available throughout much of the growing season.

Delaying mowing until after the first frost, if operational constraints allow it, reduces the impacts of mowing on pollinators and can promote plant diversity in some regions. When mowing is delayed, butterflies and other pollinators with larval stages that reside on vegetation will be able to complete their full life cycles, and flowering plants will be able to bloom and provide pollen and nectar to pollinators uninterrupted throughout the growing season. Furthermore, a mowing event in the fall can help spread wildflower seeds. Fall mowing also targets woody species that can invade pollinator habitats.

Balance vegetation management with pollinator needs.

If mowing must take place during the growing season, consider selecting a time to mow that balances vegetation management needs (e.g., noxious weed control) with the resource needs of pollinators (e.g., flowers and host plants). For example, mow at a time that will promote the growth of wildflowers; though the temporary removal of flowers will be harmful in the short term, mowing will benefit pollinators in the long term.

The timing of mowing can be targeted to reduce the abundance of a dominant plant species or litter and aid wildflower seed dispersal. To reduce the cover of an unwanted herbaceous species, mow when the plant is most vulnerable (i.e., during their growing season but prior to bloom or before seeds set). This action can help limit new growth of unwanted or dominant species the following year and create space for other species to grow. It is also worth considering varying the season when mowing takes place every few years to increase plant diversity. Mowing consistently at the same time every year will favor some plants over others. Plant diversity can be maintained by occasionally varying the timing of mowing, which will favor different plants and prevent certain plants from dominating the planting.

Clean mowing equipment after use and between sites to limit the spread of invasive weeds.

Weed seeds can spread after equipment is driven through infested areas. Seeds that lodge in tires and undercarriage are jarred loose at new locations. After mowing areas with a dense infestation of weeds, spray the vehicle's tires and undercarriage with an air compressor as soon as possible to remove weed seeds and prevent their unintentional spread.

Aim to mow no more than one-third to one-half of an area beyond the mown strip in the recovery area per year (e.g., rotate mowing sections of a roadside).

Mowing only a portion of the roadside (e.g., one pass with a mower) in a given year leaves behind refugia (i.e., intact vegetation that can support pollinators). In addition, this heterogeneous mowing strategy can help prevent gaps in blooming and enhance the diversity of flowering species across the site.

Avoid mowing host plants of imperiled butterflies during their breeding seasons.

Whenever feasible, it is important to time mowing so as to avoid vulnerable stages of the life cycle of any rare or declining species that might be present, particularly during the larval (caterpillar) stage of butterflies and moths.

If you need to mow multiple times a growing season, adjust mowing height to a minimum height of 8 to 10 inches in areas with target butterfly host plants or bumble bee colonies in grass thatch.

Mowing established vegetation at a height of 8 to 10 inches (or higher, if equipment allows; see Eco 1200 from MULAG) leaves a greater depth of vegetation for pollinators to use, which is particularly important for imperiled bumble bees that build their colonies in grass thatch aboveground or caterpillars on host plants. Adjusting the mowing height also helps vegetation to recover more quickly and reduces plant stress, particularly during dry periods or drought.

I Explore mitigation efforts if there is a known mortality hot spot for an imperiled pollinator due to vehicle collisions.

Mortality hot spots can occur if landscapes or the flight patterns of a particular species funnel pollinators through high-traffic areas. Pollinators that are poor fliers or are normally found flying low to the ground may be more vulnerable to vehicle collisions than pollinators that are strong fliers or are normally found flying high above the ground. Mitigation efforts could include reducing traffic speeds temporarily for a mile or two near the hot spot during the peak breeding season of your target pollinator species, using fencing or temporary netting to cause pollinators to fly higher when crossing the road, closing the outer lanes of traffic temporarily during the peak breeding season, or widening the mown strip within the recovery area to create more distance between the road and the habitat used by a pollinator.

Remove cut plant material via haying.

Removing the build-up of plant material once a growing season can encourage wildflower germination and growth. Extensive buildup of plant material following mowing can suppress plant diversity over time.

Conduct supplemental seeding in areas that have low plant diversity after regular mowing.

Supplemental seeding may be needed periodically, such as every 5-10 years or more often if appropriate, in order to maintain diversity in areas that receive regular mowing that has reduced wildflower diversity. Seeding supplementally early on in the life of the planting may help maintain diversity with less labor and costs.

For more detail, please see:

Pollinator Habitat Conservation Along Roadways, Volumes 1-16. National Academies of Sciences, Engineering, and Medicine. Washington, DC: The National Academies Press.

Project materials available here: <https://www.trb.org/NCHRP/NCHRPWOD362.aspx>

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(Photo: Tara Mitchell, Maryland DOT.)