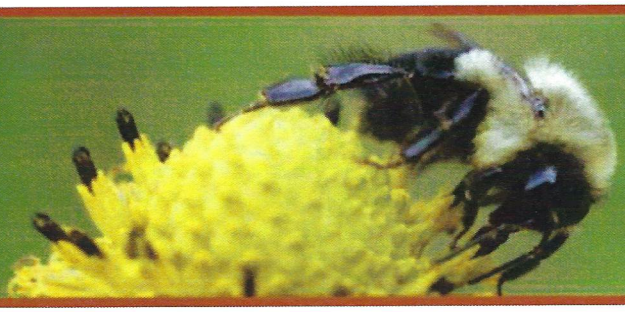


West Virginia Pollinator Best Management Practices

Mowing: Lawns and Meadows

The image of the homeowner mowing their lawn on a summer Saturday afternoon is familiar and well-established in the American psyche. In the United States, lawns cover almost 63,000 mi^2 (163,169 km^2), which include residential, commercial, and institutional lawns, parks, golf courses, and most athletic fields; Americans spend over $40 billion annually to care for them. Most lawns are monocultures of European turf grasses that provide little food value and few nesting opportunities for pollinator species. Enhancing some lawn or meadow areas by decreasing mowing, reducing pesticide application, or replacing with pollinator habitat increases pollinator community biodiversity and survival while also decreasing maintenance time and costs for landowners.

Urban and Suburban Areas

In the United States, the average size lawn is approximately 0.25 acres (1011 m^2). Lawns with healthy grass plants are a result of adequate water and appropriate nutrition. Suburban lawns are typically over fertilized, which encourages undesirable species to flourish and contributes to chemical run-off into waterways. Use of properly sharpened mulching blades on a mower will provide most lawns with adequate organic matter without chemical fertilizers. Based on an annual soil test, lime may be needed periodically depending upon the type of the soil. Some soils, such as those left after surface mining or other significant ground disturbance, may be acidic or impoverished and require additional nutrients. However, most West Virginia top soils can support turf grasses without added fertilizer. West Virginia University extension agents can provide free soil testing for state residents and advise homeowners on what nutrients may be needed.

Violets, dandelions, and clovers are beneficial pollinator plants common in lawns.

For lawns that must be frequently cut, by community requirements or personal choice, we recommend allowing some species diversity to occur with low growing flowering plants. Violets, dandelions, and clovers are beneficial flowering plants that can survive mowing if the blades are set to 4 to 6 inches. This height allows traditional lawn uses, keeps the grass healthy, and allows for some biodiversity to support pollinators.

Rule of 3

3 different species of nectar and pollen producing plants
3 different colors
3 different flowering periods

Rural Areas

Rural areas have the potential to host larger, more diverse pollinator habitats. Depending on the amount of property a landowner owns, dedicating 0.5 acres (approximately 2023 m^2) or more to pollinator habitat is recommended; although, smaller, well designed areas are also effective. Practice the Rule of Three at a minimum (see box above). Maintain at least one species of grass or sedge in these larger pollinator habitats to help physically support wildflower species and to provide food and cover, nesting, and overwintering habitat for caterpillars, bumble bees and other beneficial insects.

If the landowner wishes to create pollinator habitat by replacing areas of lawn, most quality seed mixes produced for pollinators provide more than this minimal recommendation. Beware of bargain seed mixes found at some retail stores. They are often composed of non-native species that either do poorly in West Virginia or are invasive in our area and may damage native plant communities. They also may not provide good nutrition for our native pollinators. Not all pollen and nectar are created equal. Our native pollinators thrive on native plant pollen and nectar. Trees and shrubs can also be used to enhance pollinator habitat. The trees or shrubs selected should be insect pollinated and can be planted or maintained near an established herbaceous pollinator habitat (but avoid shading). Woody pollinator habitats can also be created in areas difficult to maintain. Hillsides are an example where plantings can help reduce soil erosion and eliminate the need to mow hazardous, steep slopes. Woody species such as red maple, redbud, dogwood, or American plum are particularly helpful providing nectar and pollen in early spring for pollinators that are emerging from hibernation.

A bumble bee foraging for pollen and nectar on a redbud bloom in Taylor County in May.

Mowing

Frequently, mowing occurs because "it's always been done that way" regardless of the possible benefits of changing the way it is done. Recent research investigating worldwide declines of pollinators has identified lack of pollen and nectar as one of the threats. The time of the year, extent, and frequency of mowing affects vegetation, which in turn, affects pollinators. Removal of flowering plants eliminates nectar and pollen, which in turn starves bees and other pollinators. Although some pollinators can forage over miles; most native bees need food resources within roughly 300 ft of their nesting sites. Patches of flowering plants blooming throughout the growing season are needed to maintain native pollinators across the landscape.

Figure 1. Strip mowing at Snake Hill Wildlife Management Area, Monongalia County .

For rural landowners, mowing is often done to prevent incursion of woody vegetation into fields. To accomplish this goal, mowing is actually only needed every 3-4 years, provided that the field vegetation consists of herbaceous grasses and wildflowers; a third or a fourth of the field can be mowed annually. Often this can be accomplished by employing strip or rotational mowing (Figure 1). For fields that are infested with multifloral rose, autumn olive, or other non-native aggressive woody species, more frequent mowing is needed to keep the field herbaceous. Instead of a three or four year rotation, the landowner can implement a two year rotation, mowing half of the field each year. Additional means of control such as herbicides or physical removal may be needed.

Landowners and land managers also frequently mow roadsides to maintain a perception of tidiness, or to improve sight lines for safety. A single pass on county and many state routes will achieve these goals. Allow natural vegetation to fill the area between that single pass and the forest edge or fence line (Figure 2). These linear strips of habitat provide nectar and pollen, nesting sites for native bees, and provide avenues of dispersal to additional habitat in the late summer and fall for newly mated queens and females. These individuals may overwinter in new areas, thus providing a more resilient pollinator community by dispersing over the landscape.

Figure 2. Roadside wildflowers at Pleasant Creek Wildlife Management Area in Barbour County along County Route 10.

Mowing Recommendations

When mowing is necessary, to help increase floral diversity and pollinator abundance:

- Spring mowing should occur before April 1st
- Late season mowing should occur after November 1
- These dates may need some adjustment by landowners at high elevations in the mountain counties

Avoid mowing blooms. Avoid mowing seeds before dispersal to maintain current and future food resources for pollinators. Become familiar with plants growing on your property to avoid mowing beneficial ones.

Avoid mowing at night and cool early mornings. By mowing during the day when pollinators are more active, it allows pollinators a chance to escape the mower's blades.

Reduce the extent of mowing. Spot mow or strip mow larger areas to provide refugia areas with blooms and allow for seed dispersal.

For control of scattered undesirable plants, repeated selected weed whacking with a string trimmer can be a quick and effective means of controlling these species.

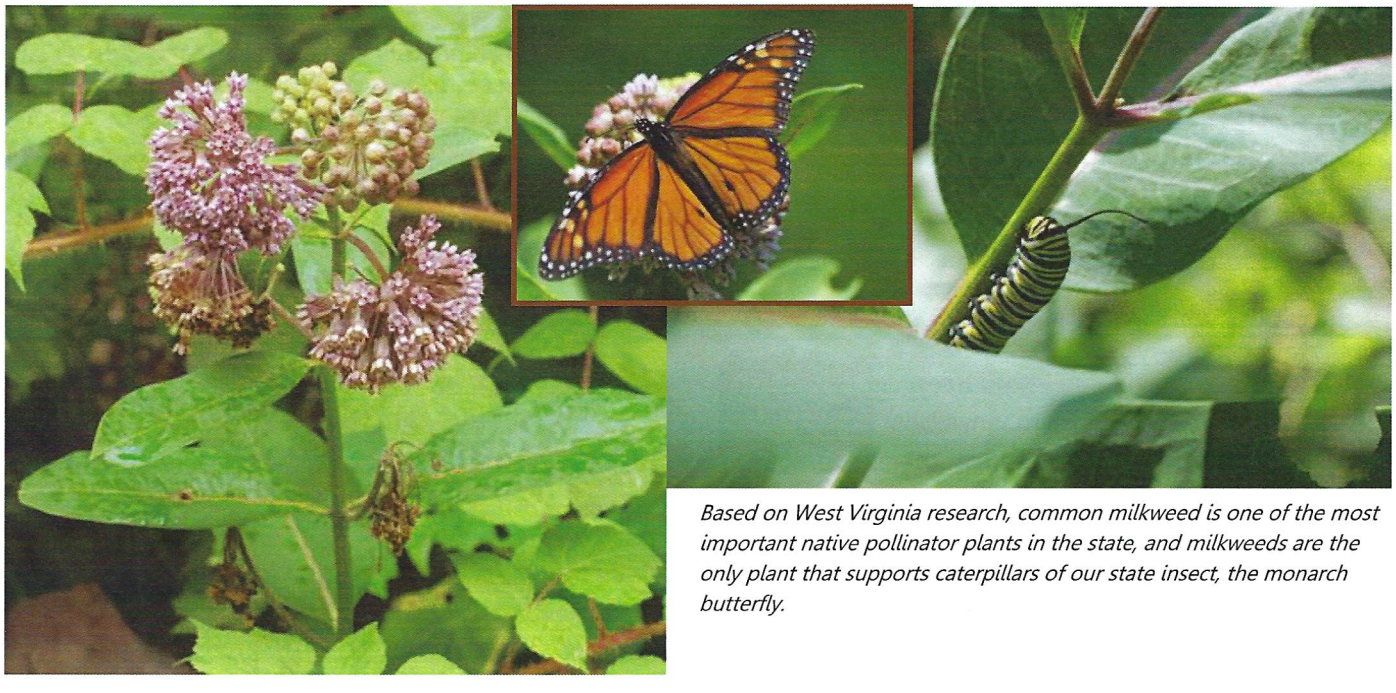
Use a flushing bar mounted on a tractor ahead of the cutting blades to avoid injuring wildlife. Mow at speeds of 8mph or less.

Set mower blades to 8-12 inches (minimum 4-6 inches). This will spare low-growing plants and will decrease recovery time for taller plant species. Blade heights of 8 inches will help protect other vulnerable wildlife species.

Avoid mowing pollinator habitat during vulnerable stages of the life cycle of rare or declining species. For example, in the majority of West Virginia to reduce harm to monarch butterflies, avoid mowing fields with milkweed and nectar plants between April 1 and November 1.

Specific management for monarch butterflies:

- Monarch caterpillars do best with fresh growth of milkweeds late in the summer during our peak monarch abundance.
- To provide this fresh growth, selectively cut one-third to one-half of milkweed stems to six to eight inches in late June through early July.
- This pruning will often promote multiple tops to form which has been shown to be beneficial for monarchs.
- Avoid cutting stems with monarch larva already present or move larva to uncut stems.



Based on West Virginia research, common milkweed is one of the most important native pollinator plants in the state, and milkweeds are the only plant that supports caterpillars of our state insect, the monarch butterfly.

Additional Resources

Several good online websites provide accurate information on pollinators. Highly regarded ones include: Xerces Society for Invertebrate Conservation (*xerces.org*), Pollinator Partnership (*pollinator.org*), Monarch Joint Venture (*monarchjointventure.org*), and Monarch Watch (*monarchwatch.org*). Below are links to some of their downloadable material related to this BMP; additional information is available on their websites.

Mowing for Monarchs (Monarch Joint Venture: *https://monarchjointventure.org/)* click on Resources— Downloads and Links—MJV handouts

Roadside Best Management Practices for Pollinators (Xerces Society: *https://www.xerces.org/)* click on Resources—Publications Library—enter title into search box

Solving Your Pest Problems Without Harming Pollinators (Pollinator Partnership: *https://www.pollinator.org/) click on Stuff—Brochures—Gardening*

Protecting Pollinators at Home (Xerces Society: *https://www.xerces.org/)* click on Resources—Publications Library—enter title into search box

Conserving Bumblebees (Xerces Society: *https://www.xerces.org/)* click on Resources—Publications Library—enter title into search box

Creating a Monarch Waystation (Monarch Watch: *https://www.monarchwatch.org/)* click on Waystations

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