

Roadsides

“Country roads” is a familiar and nostalgic refrain in the Mountain State. West Virginia has the sixth largest road system in the U.S. with over 39,000 miles of roads. Most are in rural areas (82%) and consist primarily of narrow paved or gravel county routes. Roadsides are usually bordered by different types of vegetation and, under the right conditions and management, can support a wide variety of pollinators.

West Virginia is approximately 78% forested, with natural open areas and early-successional habitat at a premium in much of the state. As such, sunny roadsides can function as important providers of pollinator habitat depending on how it is managed. The rural nature of much of West Virginia allows greater flexibility in how roadside vegetation is managed compared to urban areas.



Pollinators are essential to a healthy, functioning environment. Eighty-five percent of the world’s flowering plants depend on animals, mostly insects, for pollination and 35% of crops are pollinated by insects: one out of every three mouthfuls that we eat or drink is thanks to an insect pollinator. As pollinators are essential to the human food supply, so are they also essential to the health and functioning of natural environments. Native vegetation and pollinators are intimately linked and often can’t survive without each other.

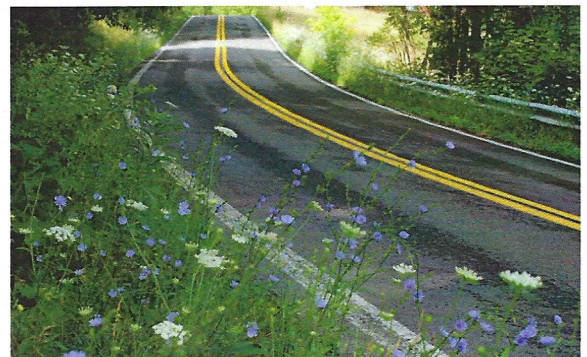
Benefits of Native Roadside Plants

Like most areas across the United States, West Virginia has its share of non-native plants that have become established since European settlement. Some common species, like purple loosestrife, Canada thistle, and garlic mustard, although used by some pollinators, are harmful to natural ecosystems and should not be encouraged to grow. Research has documented that native pollinators prefer native plants, and actually go out of their way to find them. Therefore, if states and municipalities are enhancing pollinator habitat along roadsides, they should select native species. Native plants also function better than non-native species at reducing stormwater runoff, preventing erosion, and inhibiting other non-native species from becoming established. Native species also provide a connection and a sense of place for both residents and visitors to the state.

When needed, mowing is a popular method used to control roadside vegetation. Mowing should take place early or late in the growing season to avoid cutting blooms and developing seeds of native plants. Mowing will both increase plant diversity and, over time, may help to eliminate non-native species. A healthy native plant community along roadsides also supports overwintering pollinators and promotes their dispersal for overwintering or spring breeding. Native plants also support insect predators that helps to control non-native pest insects. For example, presence of native wood mints such as narrow-leaved mountain mint (*Pycnanthemum tenuifolium*) supports small native wasps that parasitize marmorated stink bugs.

Roadsides and Pollinator Conservation

- ◇ Area for pollen and nectar producing plants
- ◇ Nesting and overwintering sites
- ◇ Dispersal corridors
- ◇ Healthy insect community





Roadside Management

Management of roadside vegetation is usually a matter of removing or cutting back herbaceous and woody vegetation for public safety or perceived aesthetics. This is accomplished with mowing, brush hogging, herbicides, and ditching. Tall vegetation is removed from roadsides to improve lines of sight for drivers, and ditching is to remove water from roadways. Contrary to popular belief, however, the frequency of automobile deer strikes is not effected by mowing or not mowing. Deer strikes vary with season and are mostly associated with food resources and behavior (breeding season, fawning season, etc.). This is a complex issue involving road type, speed

limits, and traffic density, but frequent mowing may actually increase deer strikes by attracting deer to new nutritious plant growth and causing deer to bolt more frequently because of reduced cover.

Mowing

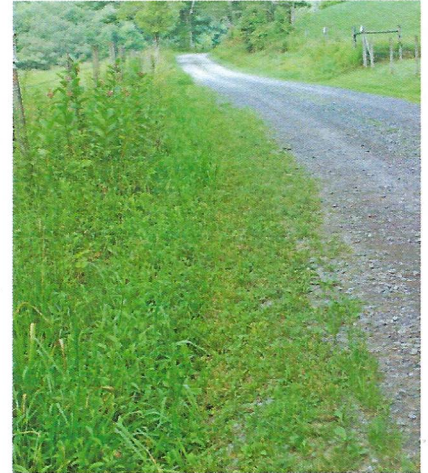
Mowing public and private roadsides is a common and frequent occurrence in West Virginia. According to the West Virginia Division of Highways (WVDOH), US and state routes are scheduled to be mowed three times during the summer, paved county roads twice a year, and gravel roads are mowed once a year. Homeowners also

frequently mow roadsides that run through or along their property for aesthetic reasons and to reduce the risk of weeds infesting their property.

Mowing by landowners is often done more frequently and at shorter heights than what the WVDOH does.

Brush hogging

Heavy-duty mowing decks and booms attached to decks are used by the WVDOH to cut small woody plants and herbaceous vegetation on banks that slope up or down from roadsides. Homeowners will often use rotary string trimmers to accomplish this task which, because of slopes, can not be done with a typical mower.

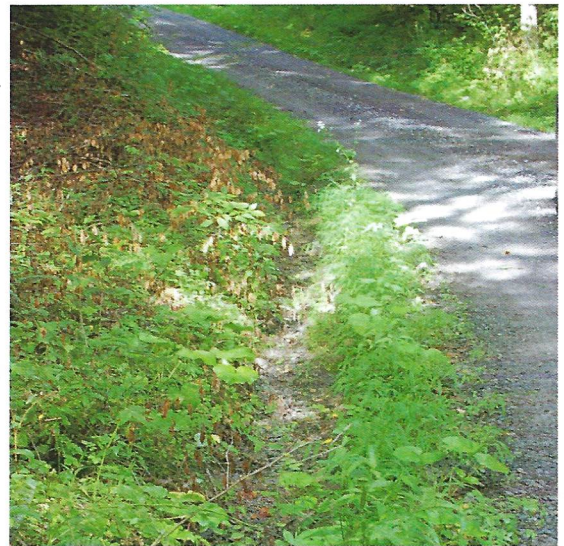


Herbicides

Where mowing or brush hogging can not be done because of obstructions, the WVDOH may use herbicides to control vegetation. Homeowners may use herbicides to eliminate vegetation to avoid continually mowing or trimming areas that difficult are to access. Herbicide users must be aware that when a plant is treated and where the plant is sprayed is critical to control it. Using a broad spectrum herbicide is no guarantee of success.

Ditching











The topography of West Virginia often makes functioning ditches an essential part of road function by removing surface water from roadways. In wooded and hilly areas, ditches typically become filled with leaves in the autumn, producing leaf dams throughout the fall, winter, and spring, resulting in minor road flooding and sometimes damage during heavy rains. Ditches may also become reservoirs of non-native plant species as runoff from roads and passing vehicles transport seeds that germinate in fertile conditions in ditches. Conversely, ditches can function as mini wetlands and provide habitat for native plants and wildlife. The WVDOH cleans out ditches during routine maintenance and will unblock culverts and remove debris if flooding is occurring. Homeowners typically ignore ditches unless they



become blocked and flood their lawns or property. Some proactive homeowners remove leaves and debris from ditches, especially on hills, to help alleviate minor flooding and road damage.



Recommendations

-  If necessary, mow roadsides before April 1 or after November 1. These dates may need some adjustment for roadsides at high elevation in the mountain counties. This practice not only helps maintain and increase native plant diversity, but overtime it inhibits growth of nonnative invasive species and reduces mowing costs.
-  Set mower blades to 8-12 inches (or as close to this as possible). This will spare low growing plant species, increase survival of tall native perennials, and help to control mostly exotic annual weeds.
-  On narrow county roads, mow no more than a 2-4 feet beyond the pavement or gravel. At the lower speeds safely used by drivers on these roads, this will provide sufficient lines of sight in most situations.
-  On 2-lane state or county routes with shoulders, mow no more than a 10-12 feet clear zone beyond the shoulder. This distance is often dictated by topography and may be considerably less. In areas that experience a high number of crashes, at intersections, and on curves, these distances may be greater. The clear zone should be tailored to the individual area but should be as narrow as possible. For safety reasons, mowing should not be attempted along 4-lane highways.
-  Avoid mowing blooms. Avoid mowing seeds before dispersal to maintain future food resources for pollinators. Mowing only sections of roadsides that impair driver safety will maintain areas with blooms and provide some seed dispersal. If mowing is required during the growing season, timing it to between June 20 and July 1 may improve blooming of some species later in the summer.
-  Avoid mowing at night or early in the morning. Mowing during the day when pollinators are active allows them to escape the mower's blades. Use a flushing bar mounted on a mower ahead of the cutting blades to avoid injuring wildlife and mow at speeds of 8mph or less.
-  Reduce the extent of mowing. Where applicable, spot mow or strip mow portions of vegetation instead of mowing the entire area. Mowing different sections in different years will help to increase plant diversity.
-  Avoid mowing during vulnerable stages of the life cycle of rare or declining species, such as the monarch butterfly. For example, for monarch conservation in West Virginia, avoid mowing between April 1 and November 1.
-  After roadside soil disturbance, plant a native pollinator mix instead of the typical blend of cool season grasses and legumes. Mulch with weed-free straw, or add a nurse crop such as buckwheat, oats, or brown top millet. Indian grass, Virginia wild rye, side-oats grama (eastern panhandle), little bluestem, and big bluestem are beneficial grass species to add to limit soil erosion.
-  If herbicides are required, spot spray instead of broadcast spray to avoiding damaging nontarget plants. Apply herbicides when the plant is young and actively growing, but before flowering to reduce risk to pollinators and to reduce seeding. Read manufacturer's directions about application rates, restrictions on applying near water (ditches), and time of year for the most effective control of the target species.



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 some downloadable materials related to this BMP. Additional information is available on their websites or others as indicated.

Pollinators and Roadsides (invertebrate conservation guidelines): managing roadsides for bees and butterflies (Xerces Society: <https://www.xerces.org/>) click on Resources-Publications Library-enter title into search box

Pollinators and Roadsides: best management practices for managers and decision makers (Federal Highway Administration) (Xerces Society: <https://www.xerces.org/>) click on Resources-Publications Library-enter title into search box

Smarter Pest Management: protecting pollinators at home (Xerces Society: <https://www.xerces.org/>) click on Resources-Publications Library-enter title into search box

Sources used in this Best Management Practice

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