

From Lawn to Meadow

Protect Water and Provide Habitat While Saving Money



Converting areas covered by turf grass to meadows can be financially rewarding and relatively simple on both public and private land. It can also deliver substantial environmental and aesthetic benefits.

Introduction 1

What Makes a Meadow? 1

Benefits 1

Creation and Maintenance 3

Concerns and Barriers 4

Additional Resources 4

Resources at ConservationTools.org 4

Introduction

America's love affair with the lawn began as an attempt to copy European aristocrats who first popularized the idea of green, grassy expanses in the 17th and 18th centuries when they planted the agricultural fields around their estates with turf. The message this sent to their neighbors was clear: they had more land than they needed—they could afford to waste some.

Today, lawns in the United States cover more than 63,000 square miles—roughly the size of Texas. Dominated by non-native species of turf grass, these lawns require a staggering amount of water, fertilizer, herbicides, pesticides, gasoline, and labor.

While manicured grass lawns provide space for recreation and events and their well-kept appearance appeals to many people, their environmental and economic costs are significant. They stifle biological diversity, contribute to air and water pollution, and cost Americans billions of dollars each year.

For many local governments, institutions, and individual homeowners, converting portions of their lawns to natural meadow is a cost-effective and ecologically sound proposition that doesn't conflict with recreational and aesthetic considerations. Once established, meadows offer a host of environmental, financial, and aesthetic benefits.

What Makes a Meadow?

The term *meadow* refers to uncultivated areas featuring herbaceous plants and soils that aren't wet year-round. While grasslands are defined as having more than 50% *grass* cover, meadows have more than 50% *forb* cover. Most forbs are wildflowers, although the term also includes non-flowering plants like ferns.

Infrequent mowing (only once or twice a year) allows a site's vegetation to diversify. Species of native grasses like bluestem and purpletop, which are suited to the mid-Atlantic, begin to colonize. Forbs like goldenrod and aster enter the site, followed by wildflowers such as daisies and black-eyed Susans. Over time, the site transforms into a meadow of diverse plants and wildlife.

Benefits

Meadows have clear advantages when compared to turf lawns. Converting an area to its natural state is an affordable way to create healthy, vibrant landscapes, whether in a public park or residential yard.

Water

Absorption

Meadows are more effective than lawns at absorbing stormwater and preventing flooding. Most lawns are prone to runoff due to their compacted soils¹ and shallow-rooting turf grass; in contrast, the looser soil and extensive root systems of meadow species increase rainwater infiltration, which in turn recharges groundwater supplies and supports stream flow during dry seasons. Meadows also lose less water to the atmosphere through evapotranspiration: the plants

¹ Soil is compacted by the heavy equipment used in construction. In public spaces, foot traffic and other forms of human use also contribute to compaction.

shade the water on the ground, lowering its temperature and allowing it to soak in rather than evaporating.

Pollution

Meadows improve water quality by intercepting pollutants that are not absorbed by turf. A buffer of native vegetation along a stream can keep more pollutants and sediment out of the water than turf in the same area. When treated with fertilizers, pesticides, and herbicides, turf lawns can themselves be a source of these pollutants.

Irrigation

To stay green in warm, dry climates, turf lawns consume massive amounts of water. The EPA estimates that landscape irrigation accounts for a third of all residential water use nationwide, totaling nearly 9 billion gallons per day. As much as 50% of this water is wasted due to evaporation or runoff from inefficient watering methods. Commercial areas and municipal spaces also require billions of gallons to meet their irrigation needs.

The native species that comprise meadows, on the other hand, are adapted to the climate and can thrive without irrigation. When meadows replace lawns, especially in drought-prone areas, communities can save clean water for essential uses like drinking.

Wildlife Habitat

Wildlife species benefit when an area is converted from mowed grass to meadow. It's really quite simple: when grasses are mowed less often, vegetation diversity increases. As the number and types of plant species increase, the meadow attracts different insects and other invertebrates, which in turn draw insectivores—and so on up the food chain.

Birds

Very few bird species, save the American robin, are attracted to lawns. Meadows, however, attract a diversity of avian species such as the redwing blackbird, American goldfinch, and eastern bluebird. They can attract several species of grassland birds like the eastern meadowlark and grasshopper sparrow whose numbers have declined over the last century due to changes in agricultural technology and loss of land to

development; while small meadows (less than 25 acres) do not provide sufficient breeding habitat for these threatened species, they do provide important resting and feeding areas along their migratory pathways.

Allowing grasses to grow to maturity along waterways has the added benefit of discouraging Canada geese, whose droppings can make areas unpleasant and contribute to high bacteria levels in the water. Geese prefer flat, open, mowed grass areas and tend to avoid dense, high grasses. More buffers and meadow areas can help municipalities reduce the number of geese in public parks and recreation areas, improving the experience of visitors.

Pollinators

Another benefit of allowing turf to succeed to meadow is the increase in pollinator species to the area.

Pollination is critical to fruit and seed production, and is often provided by insects on the hunt for nectar, pollen, or other floral rewards. Currently, habitat loss and pesticide use threaten these bees, butterflies, and other beneficial pollinators. This is especially troubling given that pollinators are essential to the production of 75% of the staple crop plants that feed humans and for 90% of all flowering plants in the world.

Beneficial pollinators have very basic habitat requirements: flowers to forage, host plants on which to lay their eggs, and an environment free of pesticides. Wildflower meadows, grasslands, and other areas rich in native plants offer these essentials. Not only do lawns lack these essentials—the fertilizers and pesticides commonly used to maintain them can harm pollinators and other wildlife.

Reduced Oil Dependence and Associated Pollution

Americans use 800 million gallons of gasoline each year to power lawnmowers and other lawn care equipment, and, according to the EPA, spill 17 million gallons in the process—more oil than was spilled by the Exxon Valdez. These machines are responsible for as much as 5% of the air pollution in the United States; a single gas-powered lawnmower emits nearly 100

pounds of carbon dioxide each year, along with hydrocarbons and particulate matter. This pollution takes a toll on the health of communities (especially for children and other vulnerable populations), and contributes to global warming.

Unlike turf, which must be mowed regularly, meadows only require mowing once or twice a year. Fewer turf lawns means less oil is extracted from the ground, less gasoline ends up in waterways, and less pollutants contaminate the air.

Cost-Effectiveness

While turf is necessary for some public areas and event spaces, it is worth considering the cost of turf management to municipalities and taxpayers. Besides the large up-front price tag of lawnmowers and other machines, turf requires continual mowing and maintenance; over time, the costs of labor and gasoline add up. However, meadows require very little maintenance. Converting a portion of a park's turf areas to meadow can offer substantial cost savings to a municipality.

This holds true for individuals as well. Lawn care is a \$30 billion-a-year industry in the United States, and the average American spends 70 hours a year working on their lawn. By converting some or all of their lawn into meadow, a person can save time and money.

In addition to the immediate, tangible financial benefits, meadows offer a host of ecosystem services.² Though harder to accurately quantify, these services—such as absorbing stormwater, and contributing less pollution to the air—have an economic impact. Floods can result in thousands of dollars-worth of property damage; dirty air can keep people home from work and school. And when ecosystem services do not occur naturally, humans must develop alternative, engineered systems that are often costlier and less efficient than nature.

² Ecosystem goods and services are the benefits that productive natural ecosystems provide for human society. Goods are the material resources like timber, food, and oil; services are the actual life-support functions like absorbing stormwater, sequestering carbon, and pollinating plants.

Visual Appeal

While close-cropped turf has a certain visual appeal, meadows offer much more sensory experience. On a breezy July day, a meadow is a beautiful scene, abuzz with activity. There is so much to observe: birds searching for meals, bees flying from flower to flower, the iridescence of butterflies, the steady chatter of crickets. Many meadow wildflowers persist into fall and attract songbirds who feast on drying seed heads. Even in winter, the dried stalks of meadow grasses and perennial flowers are striking.

Creation and Maintenance

Mowing

The easiest way to convert a portion of turf to meadow and keep it as meadow is to mow once or twice a year, allowing the turf grass to mature and other species to grow. This mowing is necessary; otherwise, shrubs and trees, including non-native species, will colonize the area.

Seeding

If your budget allows, you can augment the process by seeding native warm-season grasses and wildflowers to give the meadow more color, diversity, and visual interest. If not, over time nature will diversify the species on its own.

Areas to Convert

The most practical areas to convert to meadow are often those where simply allowing native species to flourish is easier and/or cheaper than maintaining a conventional lawn. Examples include steep slopes that are difficult to mow and swampy areas not conducive to growing turf.

Conversion is also a good strategy for areas of ecological concern. Along water corridors, meadows reduce the pollution entering waterways and absorb floodwater during storms. In places with rare or threatened wildlife, meadows can provide crucial habitat. (See “Benefits” section for more information.)

When converting areas in parks and other public spaces, municipalities face the challenge of not imped-

ing visitors; therefore, conversion usually occurs in places that are unused or less suited for recreation.

Concerns and Barriers

Appearance

When vegetation is intentionally allowed to grow beyond the height of a conventional lawn, it might be perceived as untidy or neglected. Some communities specifically prohibit this practice and regulate what residents can and cannot grow in their yards. Homeowners in these areas can seek to change the problematic municipal ordinance or homeowners' association rules; alternatively, they can explore other landscaping alternatives like low-growing ground-covers.³ See the "Additional Resources" section for information about pursuing these pathways.

Maintaining a swath of mowed turf around the edge of a meadow or posting an explanatory sign can visually communicate that the area is intentional, well-managed, and desirable.

For those managing larger meadow areas, development of trails alongside or through the meadows can demonstrate that the area is well-maintained. Trails have the added benefit of encouraging people to see a meadow's beauty up close and potentially learn about its other benefits.

Ticks

Ticks often carry Lyme disease and other diseases. Unfortunately, the very conditions that make meadows great habitat for wildlife also attract these tiny pests. Those considering converting lawn to meadow should consider how to minimize the potential for human contact with them.

Ticks like moist, shady habitat; they don't like dry, sunny areas. Maintaining wide, well-mowed edges between meadows (and wooded areas, which also provide good tick habitat) and where people walk and

play can minimize the potential for contact. So too can edging meadows with wood chips, which ticks don't like to cross. These and other strategies are explored at various websites such as

<http://www.rodalorganiclife.com/wellbeing/natural-tick-repellants-protect-your-yard>.

Additional Resources

The Pennsylvania Landscape and Nursery Association article "[Alternatives to Lawns](#)" contains information for individuals interested in converting their yards.

Penn State Extension offers the guide [Meadows and Prairies: Wildlife-Friendly Alternatives to Lawn](#), which provides more in-depth information about the conversion process that can be useful for individuals or institutions.

The Pennsylvania Environmental Council offers the factsheet "[How to Create a Meadow in Southeastern Pennsylvania](#)," which gives tips specific to that region.

The Missouri Prairie Foundation offers a [model municipal ordinance](#) encouraging the use of native plants as an alternative in urban landscape design.

Resources at ConservationTools.org

To find experts and other resources, see the right column of the on-line edition at <http://conservationtools.org/guides/151>.

³ Examples: perennial grasses, flowers, and sedges that spread and thicken to cover an area without growing tall. They require little maintenance and can crowd out weeds. Some species are tough enough to handle repeated foot traffic.

Submit Comments

Help improve the next edition of this guide. Email your suggestions to the Pennsylvania Land Trust Association at aloza@conserveland.org. Thank you.

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