



Meadows

in Southeastern Pennsylvania



ECOLOGY

Historically, meadows occurred as breaks in the eastern deciduous forest resulting from stresses such as fire, periodic flooding, insect infestation, saturated soil or unusual geology. These meadows existed as temporary ecosystems; left alone, succession returns a meadow to forested conditions. A bare field quickly fills with grasses and perennial wildflowers such as milkweed, aster and goldenrod. Soon trees and shrubs and other woody species will emerge and over the next fifty to 150 years the field will return to mature forest. To maintain a meadow setting, you must interrupt the successional

process by weeding out woody seedlings or by regularly mowing, grazing, or burning it.

In the spring, the dominant field species in southeastern Pennsylvania are “cool season grasses.” These are grasses, such as fescue, rye, bluegrass, orchard grass and timothy, which grow best during spring and fall. Many of these species are not native to this area, but planted by farmers for forage (hay) or by landscapers and homeowners for turf areas. They thrive between April and June.

In late June and early July, the cool season grasses begin to die back and it is time for “warm season

grasses” and perennial wildflowers. Examples of warm season species include: little and big bluestem, Indian grass, broomsedge and switchgrass.

Warm season grasses are historically native to southeastern Pennsylvania, which means they are “naturally” adapted to the soils and climate and can, if necessary, thrive on little rain or even periods of drought. They grow well on marginal soils. In addition, warm season grasses have extensive fibrous root systems, which penetrate the earth 5–15 feet, so they have excellent soil-holding capabilities. Soil fertility is also increased, since they regenerate their root systems every three to four years and 90% of the humus they create is incorporated directly into the soil.

Between early July and late October, the warm season species will dominate, creating lush foliage of varying shades of blue and green punctuated by wildflowers in a meadow tapestry. Common meadow wildflowers include black-eyed Susan, sunflower, aster, and goldenrod. Summer and early fall is the period when meadows exhibit their full glory. As winter sets in from November to March, the warm season grasses, which remain upright, will provide a spectacle of color, often described as “wine-red, ash grey, steel blue, gold russet, ochre, copper and amethyst.”



WILDLIFE

The beauty of the native grasses and wildflowers is complimented by the wildlife attracted to them.

Warm season grasses are prime habitat for grassland birds because they are bunch grasses, as compared to the sod-forming growth of cool season grasses.

This means that they grow upright, with bare ground between clumps. This provides the overhead protection from the elements and predators and assures quality nest sites



and material. The clumping also allows for free movement and facilitates food searching on the bare ground.

In spring, ground-nesting birds utilize the cover afforded by the grasses to brood and rear their young. Flowers attract insects, which in turn, constitutes the most important element in the diet of young birds. During the autumn months, native wildflowers and grasses produce highly nutritious seeds. These are relished by a variety of songbirds and will attract many migrants that stop over on their long journey south. Throughout the winter, the upright grasses provide food and cover for the resident birds to help them survive the winter months.

Populations of grassland nesting birds such as bobolink, Eastern meadowlark, grasshopper sparrow, savannah sparrow, upland sandpiper and bobwhite quail have declined drastically in recent years due to the loss of habitat from development and changes in farming practices, such as earlier mowing times and the extensive use of cool season grasses. Typically, these birds need at least 25 acres of grassland for survival. However, other birds, such as goldfinches, field sparrows, Eastern bluebird, Eastern phoebe, and Eastern kingbird, do occupy smaller grasslands.

Many butterflies have developed close relationships with native wildflowers. As our few remaining undisturbed habitats continue to be lost to development, many native plants are becoming increasingly rare. The implications for many butterflies are dire: with the loss of their host plants, some butterfly species are inching closer toward extinction. Unless native wildflowers and butterfly habitats are restored, we can expect to see further declines in overall butterfly populations and continued losses of rare and endangered species.

MANAGEMENT

In designing and maintaining any natural area, it is well to consider that landscape maintenance is a compromise between what nature wants to do and what we want nature to do (a truly natural area does not need to be maintained, and if it were maintained, it would no longer be natural). A naturalistic area requires judicious maintenance, meeting nature halfway, perhaps creating an idealized version of nature.

Because a meadow is a temporary stage in the ecological parade of succession, we must interrupt the process by mowing, grazing, or burning to delay a field from returning to woodland. The frequency and timing of mowing will have a dramatic effect on the composition of a meadow and its wildlife residents.

Spring is the time of year that wildlife utilizes the meadow for reproduction. Mowing between April 1 and June 20, while appealing to suburban sensibilities, is the worst time to mow. It removes nesting cover, destroys nests and eggs, and kills young birds and animals.

Late June is when the cool season grasses die back and then through August, the warm season grasses do the bulk of their growing. Mowing in late June or early July is desirable in that it removes the browning cool season species and provides (growing) space for the warm season species to grow, flower and provide habitat for the remainder of the year.



Mowing between mid-July and late October does not allow the vegetation enough growing season to renew itself and therefore provides little food and cover for wildlife until the following spring. Mowing at this time of year would only be desirable if there was a noxious species, such as thistle or multiflora rose, that you want to stop from reproducing.



Mowing between March 1 and April 1 will minimize the amount of time birds and animals lack cover because next year's growth will be on its way with the onset of warm weather. If environmental conditions, such as wet soils, prohibit early spring mowing, winter mowing, when frost has hardened the ground may be a good alternative.

To maintain a meadow, mow either once or twice a year. Once a year mowing is sufficient to keep a meadow from reverting to woodland, but may not be sufficient to discourage woody seedlings, brambles, invasive vines and multiflora rose. Mowing more than twice a year will only encourage cool season grass species and create additional turf areas.

Recommended dates for mowing are early July for the first cutting and a second cutting, if necessary, in March. This will maximize bird and animal habitat and promote desirable and attractive vegetation. Mow meadows when the ground is dry and cut at a height of 6"–8" during the growing season and 4"–6" during the dormant season. Meadows must also be monitored for intrusion by invasive plants. Eliminate invasives by spot mowing, spot spraying or wick application of an appropriate herbicide, or manual or mechanical pulling. A combination of strategies may be the best approach. Do not use herbicides within 50 feet of streams.

CONCERNS

When vegetation is allowed to grow beyond the height of a lawn, whether intentionally or not, it is often perceived as untidy, a sign of neglect, and a breeding ground for "vermin."

To give the appearance that a meadow is intentional and managed, maintain a mowed turf swath around the public edges and consider incorporating a trail network. Well maintained trails encourage people

to get into the meadow and discover their beauty up close and first hand.

The majority of wildlife species in Pennsylvania depend on natural habitat areas, but the animals many people loathe as pests are more likely to occupy residential landscapes. The Norway rat was introduced to North America by early settlers and flourished here not because of meadows and woodlands, but because humans provided them with access to garbage, crops and grains. The three most common species of snakes in this area, Eastern garter snake, black rat snake and milk snake, are just as likely to be found in a typical residential landscape as a more natural one.

Lyme's disease and the deer and wood ticks that carry it pose a serious health concern. The best way to address this concern is to provide ample setbacks from property lines and wide walking trails through naturalized landscapes.

For more information about meadow installation and management, contact Gary Gimbert at 215-699-6751.

Compiled from information from Dave Robertson, Pennypack Environmental Restoration Trust; Neil Diboll, Prairie Nursery; Bowman's Hill Wildflower Preserve; Sara Stein; Joan Iverson Nassauer, Michigan State University; and Brandywine Conservancy.

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