

## Warm-Season Grasses and Wildlife

In Pennsylvania, grassland and other field habitats for wildlife have declined steadily for decades. Some of the loss has occurred with suburban and commercial development. Some has happened naturally as the result of succession, the process by which fields eventually grow back to forests. With any habitat type, a decline in abundance can also mean a decline in the species dependent on that habitat for survival. At present, wildlife scientists are concerned about the decline of many birds associated with grassland and field habitats. Planting warm-season grasses is a good way to replace some of the grassland habitat that has been lost.

### Characteristics

Warm-season grasses are bunch grasses that grow during the warmest months of the year. Prairie grasses native to Pennsylvania, they are planted for wildlife habitat, erosion control, and for use as pasture and hay. They can be planted on a variety of sites, including back yards, crop fields, and pastures. Establishing warm-season grasses requires planning to maximize success and then patience while the grasses become established. Weed control is essential before and immediately after planting, but once the warm-season grasses are established they require little maintenance. It is best to plant native wildflowers along with your warm-season grasses to create a diverse habitat that mimics a natural prairie. This will afford the most benefit for grassland birds and other Pennsylvania wildlife.

### Switchgrass



Warm-season grasses grow during June, July, and August. Cool-season grasses, conversely, begin growing in March and April, the cooler spring months. A number of warm-season grasses are native to Pennsylvania, including big bluestem, little bluestem, indiagrass, and switchgrass (see Table 1).

These grasses are bunch grasses, meaning that each seed produces a plant that will eventually grow into a large bunch with many stems. The grasses are also very tall, reaching 4-6 feet or more, with very deep roots (5-6 feet) that are good for preventing soil erosion. The tall stems are very rigid and remain standing throughout the winter, providing shelter for wildlife.

Warm-season grasses create a striking visual scene. They look very different from the grasses most of us are used to seeing in our lawns and hay fields. They are much taller and more colorful. For instance, big and little bluestems are so named because of their bluish green blades of grass. In fall, they turn reddish purple. The seed heads are interesting too. Big bluestem is sometimes called

“turkey foot” because its seed head resembles just that. Little bluestem’s seed heads look like small tufts of cotton, and the long, fluffy seed heads of indiangrass turn golden in autumn.

Adding wildflowers (Table 2) makes a warm-season grass planting even more attractive. It will also draw more wildlife. Many native wildflowers that are easy to grow and drought tolerant are available from nurseries and seed suppliers.

## Warm-Season Grasses and Wildlife

Warm-season grasses have multiple benefits for wildlife—including food, nesting sites, and winter cover. Grassland birds, hawks, rabbits, and other small mammals all use warm-season grass habitats.

### Food

Together, warm-season grasses and wildflowers provide many types of food for wildlife. Birds from field sparrows to wild turkey eat the insects living in the grasses. Birds and mammals forage for seeds among the grasses and wildflowers, and animals like meadow voles and eastern cottontails feed on the young grass shoots.

The most obvious benefit from wildflowers is the nectar they provide for important pollinators ranging from butterflies and moths to hummingbirds and bees. Grassland songbirds perch on wildflowers while singing to attract a mate, defending their nesting territory, or hunting for insects to feed their young. They also eat the seeds that wildflowers produce.

### Cover

Warm-season grasses provide both nesting and winter cover for wildlife. Because of the thick grass bunches and rigid upright



Big bluestem



Big bluestem and wildflowers

**Table 1. Selected Warm-Season Grasses Native to Pennsylvania.**

Common Name	Scientific Name	Recommended Varieties	Height	Site Conditions/ Comments
Big bluestem	<i>Andropogon gerardii</i>	Niagra Rountree	5-7 feet	<ul style="list-style-type: none"> <li>• Tolerates hot, droughty sites and medium to low fertility in acid, sandy, loamy, and clay soils</li> <li>• Poor shade tolerance</li> <li>• Grows best in moist, well-drained sites</li> </ul>
Little bluestem	<i>Andropogon scoparius</i> also sometimes listed as <i>Schizachyrium scoparium</i>	Aldous Camper	2-4 feet	<ul style="list-style-type: none"> <li>• Extremely drought tolerant</li> <li>• Grows best in soil pH of between 5.5 and 6.5</li> </ul>
Indiangrass	<i>Sorghastrum nutans</i>	Rumsey NE-54	4-6 feet	<ul style="list-style-type: none"> <li>• Grows best in deep, well-drained soil but tolerates moderately wet soil</li> <li>• Moderately drought tolerant</li> <li>• Full sun</li> </ul>
Switchgrass	<i>Panicum virgatum</i>	Shelter Cave-in-rock	4-6 feet	<ul style="list-style-type: none"> <li>• Grows in low-fertility, acid, sandy, clay, and loamy soils</li> <li>• Excellent heat and drought tolerance</li> <li>• Full to partial sun</li> <li>• Grows well on moderately well-drained soils, more tolerant of somewhat poorly drained sites than other warm-season grasses</li> </ul>

**Table 2. Examples of Wildflowers to Plant with Warm-Season Grasses.**

Common Name	Scientific Name	Flower Color	Comments
Butterfly weed	<i>Asclepias tuberosa</i>	Orange	Good nectar source
Aromatic aster	<i>Aster oblongifolius</i>	Violet	Leaves are aromatic
Partridge pea	<i>Chamaecrista fasciculata</i>	Yellow with red anthers	Native legume <sup>a</sup> , easy to grow
Lance-leaved coreopsis	<i>Coreopsis lanceolata</i>	Yellow	Easy to grow
Plain's coreopsis	<i>Coreopsis tinctoria</i>	Yellow, red center	Midwestern species, easy to grow
Showy tick-trefoil	<i>Desmodium canadense</i>	Pink, purple	Legume
Perennial sunflower	<i>Helianthus microcephalus</i>	Yellow	
False sunflower	<i>Heliopsis helianthoides</i>	Yellow	Easy to grow
Purple cone flower	<i>Echinaceae purpureae</i>	Pink-purple	Easy to grow
Blazing star	<i>Liatris aspera</i> <i>Liatris pycnostachya</i> <i>Liatris spicata</i> <i>Liatris squarvosa</i>	Pink, purple, lavender	Flowers are spikes
Wild blue lupine	<i>Lupinus perennis</i>	Blue	
Beebalm	<i>Monarda didyma</i>	Red	Easy to grow
Wild bergamot, horsemint	<i>Monarda fistulosa</i>	Lavender	Easy to grow
Browneyed susan	<i>Rudbeckia fulgida</i>	Yellow	Easy to grow
Blackeyed susan	<i>Rudbeckia hirta</i>	Yellow	Easy to grow
Spiderwort	<i>Tradescantia ohioensis</i>	Lavender, purple	Easy to grow

<sup>a</sup>Legumes are plants that return nitrogen to the soil through special nodules on their roots.

stems, grassland birds find good nesting cover in warm-season grasses. White-tailed deer are also known to “hide” their young fawns in warm-season grasses in Pennsylvania. The spaces between bunches allow birds, rabbits, and other animals to move easily among the grasses while feeding and seeking shelter. Most species of grassland birds prefer a habitat with a variety of grasses and wildflowers for nesting and raising their young.

Winter cover, which can be scarce in some landscapes, is perhaps one of the most important habitat elements warm-season grasses provide. If heavy snow cover does weigh the grasses down, they can return to their upright position as the snow melts. Cool-season plants may remain matted down after heavy snows, so planting warm-season grasses can add important winter cover to your habitat.

Together, both cool-season and warm-season grasses afford the greatest variety of food and cover for wildlife throughout the year. Since cool-season plants often grow in fallow fields, along roadsides, and in other uncultivated areas, planting warm-season grasses helps to diversify available habitat for wildlife. If you can plant large grassland areas for wildlife habitat, it is a good idea to plant blocks of both warm- and cool-season grasslands adjacent to each other.

## Wildlife Use

The types of wildlife that will benefit from warm-season grasses vary with the size of the area you plant. Small patches of these grasses and wildflowers can be an attractive and unique addition to your home landscape. They will also add diversity for wildlife. Small patches provide some shelter for wildlife, such as meadow voles, rabbits, and songbirds; seeds for birds; nectar for adult butterflies; and food for caterpillars.

If you plant small field areas in warm-season grasses, you’ll also provide habitat for large mammals like fox and some of the grassland birds that can nest in small

fields, such as field sparrows and song sparrows. Hawks, such as the red-tailed hawk, will often hunt over the fields searching for small mammals hidden in the grass. If you can plant a larger area of warm-season grasses, you may be able to provide habitat for grassland birds that need larger areas for successful nesting and are in the greatest danger of decline from habitat loss.

Where warm-season grasses are located within the larger landscape will also affect which species may use the habitat.

### Some grassland birds you might find nesting in larger fields

Northern harrier  
Grasshopper sparrow  
Ring-necked pheasant  
Field sparrow  
Vesper sparrow  
Savannah sparrow  
Dickcissel  
Bobolink  
Eastern meadowlark

In other words, if you plant large areas of warm-season grasses within a landscape dominated by other open habitat, such as an agricultural landscape, you will have a better chance of attracting the species that need the largest grassland areas for successful nesting.

On the other hand, if you plant warm-season grasses within a more forested landscape, turkey and grouse may bring their poults to feed on insects, and rabbits and deer may also use the grasses. No matter where you plant warm-season grasses, there will be some benefit for wildlife, but it’s important to understand that the surrounding landscape influences which animals are attracted to your site.

The wildlife that use your habitat will also be determined by what you plant. For wildlife, in general, you might say that “variety is the spice of life.” Thus, planting a mixture of warm-season grasses and wildflowers will provide a more diverse habitat than grasses alone. Along the same line, a mixture of grass species is better than a single grass species. In general, the more diverse the habitat, the greater the variety of wildlife species that will use your site.



Eastern meadowlark



Bobolink

### Additional Benefits

Warm-season grasses have other benefits as well. They reduce soil erosion and runoff into our streams and rivers. They can provide late-season pastures and hay crops for livestock. With careful planning, farmers can maximize the benefits of warm-season grasses for both livestock and wildlife. Work is also under way to develop fuel from warm-season grasses.

## Establishing a Warm-Season Grass Habitat

### Selecting a Site

Warm-season grasses will grow in a variety of soil types. They have been grown successfully on sites with a variety of past uses, from surface mines in need of reclamation to former lawns.

Weed-free sites are the most convenient for establishing warm-season grasses. Last year's cornfield is an ideal site on which to start. An old pasture or fallow field already covered in cool-season grasses is harder to convert to warm-season grasses, but it can be successful if the existing vegetation is diligently removed and weed control is ongoing throughout the early establishment period.

### Preparing the Site

Site preparation depends on what is currently there. If the site was farmed and has crop residue, such as corn stubble, from last year's crop, you can plant directly into the stubble with a no-till drill. If the corn stubble is so thick that it covers most of the soil surface, chopping the stalks and letting them break down over the winter will help to clear the site for spring planting. It's important to have some crop residue on the site for protecting soil and holding moisture. Deciding how much crop residue is enough or too much is usually a judgment call. An experienced natural resource professional can help you with this decision.

If the site is covered with sod, such as a back yard or an old pasture, it is best to remove as much of the sod as possible before planting. The existing grasses will compete with the warm-season grasses during the early stages of establishment. Existing vegetation can be removed with registered herbicides or plowed under. A combination of methods has also been effective. For more details, refer to the section on weed control.

Soil amendments, such as lime and nitrogen, should *not* be added before planting. Applying nutrients prior to planting can promote the growth of cool season weeds more than it helps warm-season grasses. The cool-season weeds

then compete with the warm-season seedlings for moisture and light. Unless the site has an extremely low pH, there is no need for any soil amendments before planting. After the warm-season grass stand is well established and weeds are under control, the site can be evaluated for any nutrient needs.

### What to Plant

The most commonly planted warm-season grasses include big bluestem, little bluestem, indiagrass, and switchgrass. To enhance your habitat's beauty and diversity, add wildflowers and legumes. (See Table 3.) You can plant as much wildflower seed as you like, but adding wildflowers and legumes at a rate of 1/4 to 1 pound per acre generally is sufficient to produce a large variety of flowers. Always order pure live seed.

### When and How to Plant

For spring seeding, it is best to plant warm-season grasses from March to May. They can also be seeded over the winter between the first hard frost (mid November to early December) and the end of spring planting time (May).

The preferred method for planting is with a no-till drill. Conventional tilling methods and broadcast seeding can also be used, in conjunction with cultipacking the tilled soil (firming the seedbed) both before and after seeding.



Red-tailed hawk

Good seed-to-soil contact is important for good germination. In general, broadcast-seeding is not as successful as drilling the seed into the soil on larger sites but is probably the only method available for small back yard plantings. Planting depth should be as close to 1/4 inch as possible.

Big bluestem, little bluestem, and indiagrass have fluffy seeds and are normally planted with no-till native grass drills equipped with a seed box for fluffy seeds. Switchgrass can be planted with a conventional grass drill. In Pennsylvania, no-till native grass drills are less common than conventional grain drills. Some farm equipment dealers and custom seeders may have these drills. In addition, some government agencies and conservation groups, such as Pheasants Forever, offer native grass drills for use on private lands.

### Have Patience

During the first growing season after seeding, most growth of warm-season grasses is downward, to establish roots. Aboveground growth during the establishment period can be hard to find and easily overlooked. In addition, depending on when the seeds are planted, some will

remain dormant until the second growing season. This is the time when many people think their planting is a failure. It is also when patience is required.

After the roots become established and all the seeds break dormancy, you should see more aboveground growth each year. This process can take a few years (depending on weather, competition from weeds, etc.) until the grass looks as if it has really established itself throughout the planting area. Once the warm-season grasses are established both below and aboveground, they can outcompete the cool-season weeds that may provide competition early in the establishment period.

## Weed Control

It is essential to control weeds as your warm-season grasses are becoming established. If weeds are abundant during the first few years, you may need to reduce shading and competition for moisture by mowing the site to a height of 6-10 inches before the warm-season grasses are very tall. As a general rule,

**Table 3. Sample seed mixes. Seed mixes are given in pure live seed (PLS).**

<b>Tall Mix</b>
4 lbs. per acre big bluestem
2 lbs. per acre little bluestem
2 lbs. per acre indiagrass
2 lbs. per acre switchgrass
with
1/4–1 lb. per acre wildflower and legume mix
<b>Short Mix</b>
4 lbs. per acre sideoats grama
4 lbs. per acre little bluestem
3 lbs. per acre switchgrass
with
1/4–1 lb. per acre wildflower and legume mix
<b>Switchgrass<sup>a</sup> mix</b>
10 lbs. per acre switchgrass with
1/4–1 lb. per acre wildflower and legume mix

<sup>a</sup>Note: switchgrass can be planted with a conventional drill. All other warm-season grasses should be seeded with a no-till drill designed for these fluffy seeds (see below).

### Sample Establishment Plan for Warm-Season Grasses

#### Fall

- Prepare site. Use herbicides to remove existing vegetation from seedbed if necessary.

#### Winter

- Decide maintenance methods and species to plant. If broad-leaved herbicides are to be used, select wildflowers tolerant of the specific herbicide. If only mowing is to be used, wildflowers can be included even though some of them may get clipped during weed control.
- Order seeds for spring delivery.

#### First growing season (March-May)

- Prepare site. Remove existing vegetation from seedbed.
- Plant warm-season grass seeds.

#### May-August

- Regularly evaluate the progress of your warm-season grasses to determine any necessary weed control measures.
- If necessary, control weeds by mowing to 6-10 inches, as long as warm-season grasses are under this height, or use a registered herbicide that will not harm the warm-season grasses or wildflowers. Mowing for weed control may be needed more than once during this season. It depends on weed growth.

never clip more than the top third of a warm-season grass. Mowing “knocks back” the weeds and allows the warm-season grasses to get ahead of them in height. You may need to mow more than once each year during establishment until the cool-season weeds are under control and the warm-season grasses take off. Once the warm-season grasses are established and cover most of the site, mowing is no longer needed.

Although mowing is often done to control weeds, registered herbicides can also be used to control broadleaved weeds. Talk to a local resource professional about the correct herbicides to use while minimizing damage to the warm-season grasses and wildflowers. Most broadleaved herbicides will also kill the wildflowers you plant. If you want to use herbicides for weed control, plan your planting ahead of time to include wildflower species that are tolerant of the herbicides you want to use.

Although weed control during establishment is very important, once warm-season grasses are established, it is good to allow some of the naturally invading wildflowers, such as goldenrod or queen anne’s lace, to grow in your warm-season grass stand. You don’t want to allow them to take over your warm-season grasses, but having some of them mixed in with the grasses and wildflowers you planted will add diversity to your habitat.

### Technical Assistance

Because planting warm-season grasses is a relatively new wildlife habitat practice, you may want to consult someone who has experience with warm-season grasses for technical advice. The Pennsylvania Game Commission provides assistance to individuals in its cooperative farm-game project. USDA’s Natural Resources Conservation Service and the County Conservation Districts provide assistance to farmers and other rural landowners. Private organizations such as Pheasants Forever also offer assistance to landowners.

## Maintaining Warm-Season Grasses

Most of the effort to grow warm-season grasses is required during establishment. Once established, the grasses can be left to grow for many years without much, if any, need for maintenance. In well-established stands, the grasses themselves will outcompete most weeds. Some stands will grow very thick, and mowing after the nesting season, every 4-7 years, can be done to remove some of the accumulated residual growth. Haying and grazing might also be options if the grasses are planted for both agricultural and wildlife use.

Finally, prescribed burning can be an effective management tool for controlling weeds and increasing stand vigor, as these grasses evolved with natural fires. Prescribed burns must be conducted by properly trained persons and require thorough planning. Follow local burning ordinances and laws. Mowing is a good substitute if burning is not feasible.

## Nurseries and Seed Suppliers

Check with local seed companies and farm supply stores first.

Ernst Conservation Seeds  
9006 Mercer Pike  
Meadville, PA 16335  
(800) 873-3321  
Ernst@ernstseed.com  
www.ernstseed.com

North Creek Nurseries  
388 North Creek Road  
Landenburg, PA 19350  
(877) ECO-PLUG  
www.northcreeknurseries.com

Osenbaugh Grass Seeds  
Route 1 Box 44  
Lucas, IA 50151  
(800) 582-2788

Prairie Nursery  
P.O. Box 306  
Westfield, WI 53964  
(800) 476-9453  
www.prairienursery.com

Prairie Ridge Nursery  
9738 Overland Road  
Mt. Horeb, WI 53572  
(608) 437-5245  
crmecc@chorus.net  
www.prairieridgenursery.com

Sharp Brothers Seed Co.  
396 SW Davis St. - LaDue  
Clinton, Missouri 64735  
(660) 885-7551  
sales@sharpbro.com  
www.sharpbro.com

Sylva Native Nursery and Seed Company  
1683 Sieling Farm Road  
New Freedom, PA 17349  
(717) 227-0486  
plants@sylvanative.com  
www.sylvanative.com

## Additional Reading

Brown, Lauren. GRASSES, AN IDENTIFICATION GUIDE. New York: Houghton Mifflin, 1979.

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