



# Grow a Native Grass Meadow

by Carol A. Heiser  
illustrations by Spike Knuth

Wild in the Woods

When Katharine Lee Bates first wrote her 1895 poem “America the Beautiful,” which has since become one of our best loved patriotic songs, her “amber waves of grain” and “fruited plain” described an icon of the American Midwest that was fast becoming our country’s breadbasket: the prairie. Hundreds of thousands of square miles of grasslands covered more than a quarter of the continental U.S. and supported an estimated 60 million bison, not to mention a whole guild of grassland birds and other species that made up the prairie ecosystem. Over the last century, however, the prairies succumbed to the marvel of agriculture, their rich soils rewarding us with tons of wheat and corn. Today, in stark contrast to their original size, only 1 percent of the original prairies are left, and conservationists are faced with the daunting challenge of how to preserve or restore the remnants.

Fortunately there is a resurgence of interest in these dwindling grassland ecosystems, and

Virginia is no holdout. Although we cannot hope to reestablish all of the historical ecosystems missing from our now highly developed and populated landscape, the Department of Game and Inland Fisheries nevertheless promotes the use of native warm season grasses in much of its habitat work. These grasses are suitable for both large-scale farm plantings as well as smaller meadows brimming with attractive wildflowers. By converting or restoring open lands to native grasses, we mimic prairie habitats and address the needs of numerous bird and mammal species that require prairie-like conditions to survive.

## Grassland Habitats

Much of the existing “grassland” one commonly sees in Virginia’s rural landscape is either cut for hay or grazed by livestock. These open fields are planted with a final product in mind—grass or forage—and the plants most



Switchgrass



Indiangrass

frequently used include orchardgrass or fescue. Landowners especially appreciate the non-native fescue for its tough, aggressive qualities that ensure fast growth, reduced soil erosion, and the ability to withstand heavy grazing. Unfortunately, there is a downside to fescue's tenacity: it is invasive and forms a dense mat that effectively out-competes native grasses, thereby excluding the plant diversity and habitat structure essential to many open-land wildlife species.

Missing from these artificial grassland monocultures are layers of different vegetation and the freedom of movement between plants that ground-foraging birds and mammals need to find food and to escape predation. Native warm season grass habitats are more productive for wildlife because their higher degree of species diversity bestows varying plant heights and excellent cover.

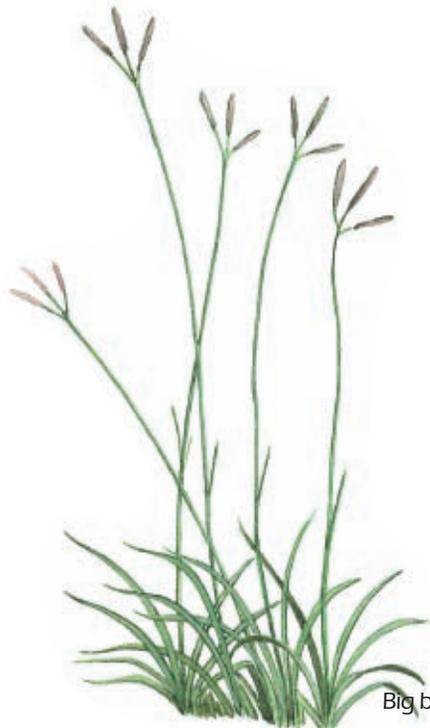
The value of cover can not be over-emphasized. Ground-dwelling birds rely on a range of cover types, such as nest cover to incubate eggs, brood cover to raise young, loafing cover to rest between forays, and winter cover against the elements. Warm season grasses stand upright and are quite tall, from six to eight feet. Height provides valuable overhead cover from predators, like hawks, as wildlife moves about underneath. Dry grass stalks bend over and form pockets of protection even during winter, when other plants are completely covered by snow.

Another advantage of native warm season grasses is that they grow in clumps or bunches. The spaces between the clumps are exposed patches of bare ground, and the first six inches above the ground is loosely structured and fairly open. In this environment, seeds and insects



are more accessible to birds like quail and turkey broods. Wildlife can also move quickly and easily between the plants should danger strike.

Wildlife which keys in on these open, early stages of plant growth or succession are called "early successional species." Of national concern is the grassland bird community that has been especially vulnerable to increasing development pressure and whose numbers are declining. In addition to quail mentioned above, other early successional species that benefit from native grassland management are grasshopper sparrow, dickcissel, meadowlark, sedge wren, and the state threatened upland sandpiper and loggerhead shrike.



Big bluestem

Switchgrass, indiangrass, and big bluestem are native grasses that benefit a variety of bird species, including the sedge wren perched on foxtail grass (right) and bobwhite quail (upper left).



A blue grosbeak perched on sumac overlooks a native grass meadow.

## Reaping Benefits

In addition to improving wildlife habitat, there are several other benefits of using native grasses in the landscape. Because their historical origin is the prairie, where conditions are typically hot and dry during the growing season, native grasses are extremely drought tolerant and have a distinct survival advantage over non-natives during the summer months. In hot weather, fescue and other cool season plants wilt miserably or turn to brown crunch, while native grasses are growing vigorously and showing off their green—hence their name, “warm season” grasses. Natives like switchgrass, indiagrass, little bluestem, and big bluestem all have very deep roots—some up to 12 to 14 feet—that are adapted to find moisture in the soil and withstand the effects of extended dry spells. The plants are also adapted to fire and will respond with renewed vigor after a prescribed burn.

For the landowner who raises livestock, native warm season grasses fill the void in summer when other forages are drying up. These grasses are very palatable to cattle, require little or no fertilizer, are disease resistant, and do not exhibit the endophyte (fungal) problems often associated with fescue. They can also be hayed in summer, after the peak nesting time of ground-nesting birds, and should be mowed high (at 10 inches) for proper management, which also leaves substantial wildlife cover.

For the “farmette” homeowner tired of mowing five acres of lawn every summer, native grasses can form an interesting landscape element that provides textural beauty and a pleasing backdrop to favorite wildflowers.

In addition, native grasses can be used effectively in field borders, filter strips, waterways, and right-of-ways.

## Meadow Myths

Midwestern prairies are considered a climax plant community, which means that the community of grassland plants which occur there is the last stage of succession. Succession is a term ecologists use to describe the gradual change of vegetative types over time. Here in the East, in contrast, the climax community is forest. Our open fields are in an early successional stage which will gradually revert to a predominance of woody plants and trees over time (you’ve probably noticed on a drive through the country how abandoned fields sprout cedar trees within a few years). This means that if we



want to maintain an area as an open grassland or meadow, we must manage that area with burning and mowing to keep it in an early successional stage. Meadows are, therefore, never “maintenance free,” as the purveyors of meadow-in-a-can type products might have us believe.

Another misconception is that a meadow is mostly flowers. It would certainly seem so, if we were to base our view solely on all those visually stunning pictures found in catalogs and magazine advertisements. In reality, a healthy meadow is at least 50 percent grasses, and usually more. The “wildflower” meadow is a myth, because here in Virginia it would be extremely difficult to establish and perpetuate a large field solely of flowers without a high degree of maintenance. Wildflower mixes that promise a burst of color the very first year are usually loaded with annuals. These plants will die after the first year of growth. They are intended to reward you with initial gratification while you wait for the perennials—the real powerhouses of a “wildflower” meadow—to become established in the second year. If you want to see continual splashes of color in a warm season grass meadow, plan for a 50:50 mix of native grasses and perennial wildflowers as a general rule (60:40 would be better). Flowers enhance a meadow habitat for butterflies and other nectar seekers.

A third misconception is that if the ground is cleared down to bare soil, then new grasses

and flowers planted there will automatically have a head start over any weeds, and there shouldn't be a weed problem. However, keep in mind that disturbing the soil during preparation for planting will bring dormant weed seeds to the surface, and the majority of them are well-adapted to thrive in the conditions you just created (that's because they're early successional species, too). Also, since grasses grow from the base of the plant or from underground stems called rhizomes, any bits of living grass roots or stems remaining in the soil at planting time will already have a foothold for stiff competition. This means that if you want a new meadow to grow successfully, you can't just walk away after the seeds or plugs are in the ground and forget about them. Growing a meadow is like any other type of gardening or farming: it requires some maintenance.

One must exercise patience after planting native warm season grasses, because they require at least two growing seasons (sometimes three) to become fully established. The most invaluable point to take home when planning a meadow of native warm season grasses is that fescue and any other pre-existing plants **must be completely** killed first, or you will be wasting your time, and probably money, too.

## Planning a Meadow: What to Buy

When planning a meadow of native warm-season grasses, whether or not you choose to add flowers, select a site that receives full sun more than eight hours a day. Also consider placement with regards to how or whether you will be able to burn the field for future management. Remember, these plants are large and adapted to be out in the open. They will need a lot of space and are not well-suited to a small urban or suburban yard. At a very minimum, a full-blown grassland meadow should be at least one acre (43,560 sq. ft.) to have some benefit for wildlife.

Order your seeds directly from a supplier who will prepare a customized mix. This way you'll get exactly the species you want and the quantities you need, with no extra frills or surprises. Be sure to request Pure Live Seed (PLS) when ordering. PLS is the percentage of viable (live) seed that is contained in a bag of bulk seed, since most bulk native grass seed consists of other plant parts and chaff. A bag of bulk seed should be at least 75 percent PLS for good establishment.

On large acreages, the following is a good mix for wildlife:

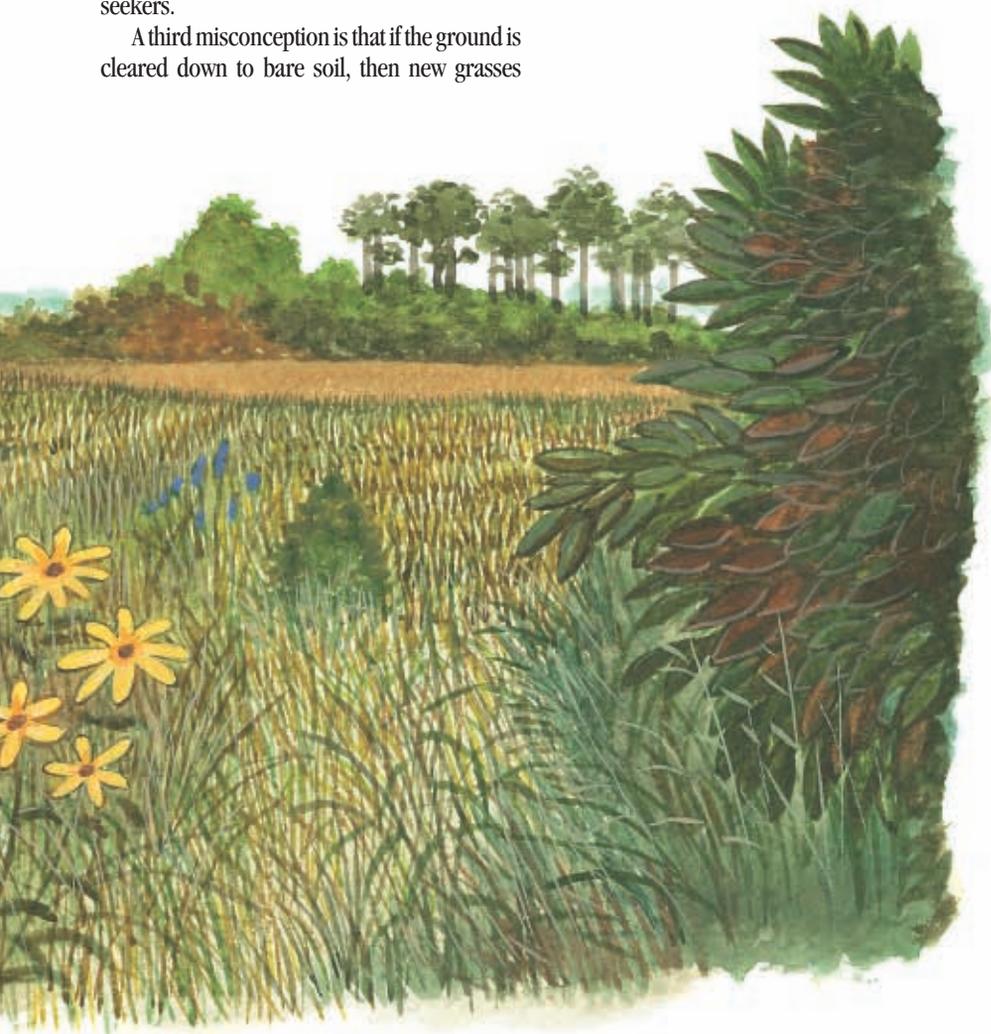
- 2 lbs. PLS Switchgrass (*Panicum virgatum*)
- 2 lbs. PLS Indiangrass (*Sorghastrum nutans*)
- or Big Bluestem (*Andropogon gerardii*)
- 2 lbs. PLS Little Bluestem (*Schizachyrium scoparium*)
- TOTAL = 6 pounds of seed PER ACRE**

If the objective is grazing land for livestock:

- 2 lbs. PLS Cave-in-Rock Switchgrass (*Panicum virgatum*)
- 3 lbs. PLS Big Bluestem (*Andropogon gerardii*)
- 2 lbs. PLS Indiangrass (*Sorghastrum nutans*)
- TOTAL = 7 pounds of seed PER ACRE**

If you want a grassland meadow with a fine display of flowers, use this recipe instead:

- 2 lbs. PLS Little Bluestem (*Schizachyrium scoparium*)
- 1 lb. PLS Shelter or Blackwell Switchgrass (*Panicum virgatum*)
- 1 lb. PLS Rumsey Indian Grass (*Sorghastrum nutans*)
- 1 lb. PLS Round Tree Big Bluestem (*Andropogon gerardii*)





A grasshopper sparrow sways back and forth on a thin stem of switchgrass.

2 lbs. of a MIX of native perennial flowers that are true species types, not cultivars. Choose from the following list, based on your preferences and pocketbook, to make up 2 pounds of seed: black-eyed Susan (make sure it's the perennial kind); partridge pea (actually a bi-annual, but it reseeds itself like a perennial); lance-leaf coreopsis; "sunflower" heliopsis; purple coneflower; *Gaillardia* (blanket-flower); Maximilian sunflower (gets 3 to 6 feet tall with numerous yellow flowers on the top third of the plant); butterfly milkweed; New England aster; *Liatris* (gayfeather).

**TOTAL** = 7 pounds of seed PER ACRE

[**Note:** the terms "Cave-in-Rock," "Shelter," "Blackwell," "Rumsey," and "Round Tree" listed above refer to particular grass varieties you should select.]

## Planting and Future Maintenance

To prepare a large area for planting, treat the site in the fall (October) with an herbicide that will kill existing vegetation; a second application may be needed the following spring for maximum effect. A conventional till method without chemicals can be used instead to turn under the existing sod. However, there will likely be future headaches with persistent plants unless the area is tilled more than once and the second tilling is done at the right time after the first flush of new weeds.

The seedbed must be firm when you plant, and seeds should be planted at a depth of 1/2-inch. Control weeds during the establishment year by mowing them when they first reach 18 inches, taking care that the mower blade is set above the warm-season grass seedlings.

In subsequent years when haying or grazing—or at anytime during the growing season—do not cut warm-season grasses below 10 inches. The first growth node of these grasses occurs at 10 inches above the ground, and cutting below this point during the growing season will force the plants to use valuable energy stored in the roots. Repeated cuttings below 10 inches at this time of year will eventually kill the plants. Also, do not mow or graze after September 1, as this is the time when the plants are moving nutrients from the leaves to the roots in preparation for winter dormancy.

If you do not plan to take hay or graze your meadow but instead leave it for wildlife, then you will need to manage the grass stand by burning or mowing.

Prescribed burning is preferred over mowing because fire removes the build-up of thatch and plant litter on the ground that will gradually occur. Untended, thatch reduces plant vigor and eventually causes the stand to thin out, which also leaves it more susceptible to fresh weed invasion. Therefore, in the third year of your meadow, begin a prescribed fire rotation by burning only one-third of the field in late March or early April, when the warm season grasses have only one to two inches of new regrowth (at this early stage of the growing season, the "10 inch rule" does not apply).

Burning only one-third of the field at a time each year ensures maximum habitat effect. The most recently burned area will be open,

which is better habitat for rearing young and finding seeds. There is also a much higher availability of insects in the first year after a burn. In the unburned parts of the field that have older plant material, songbirds, rabbits, quail, and other wildlife use the dead litter for nest construction and cover.

## Need Equipment?

It's always best to use the right equipment for the right job. If you are planting a small area by hand, you might use a Brillion seeder, a machine driller that is typically used to plant lawns. However, if the species you've selected have very "fluffy" seeds, they might clog this type of seeder. In this case you might simply broadcast with a chest bag, starting with the big seeds first and then going back over with other, smaller seeds. Check your local lawn and garden supplier for these types of equipment.

For large scale planting projects on several acres or a farm, the Virginia Department of Game and Inland Fisheries offers two invaluable pieces of large equipment, both available at no charge. The first is a grass drill to do the planting. This is specially outfitted to plant native warm season grass seed, which does not ordinarily flow through conventional no-till drills. The second is a "burn trailer," if you are prepared to conduct a prescribed burn on your own. The trailer—which can be pulled behind a pickup truck—is equipped with drip torches, hand tools, a fire weather kit, and a 150 gallon spray rig tank. Call the Powhatan field office of VDGIF at (804) 598-3706 to reserve or ask questions about the equipment.

## Taking Initiative

In an effort to address the continuing decline of early successional bird species, a management plan called the Northern Bobwhite Conservation Initiative (NBCI) was written in March 2002 by biologists, land managers, and other researchers. The word "bobwhite" in the name is somewhat misleading, because quail are not the only birds that benefit from these efforts. Rather, all early successional species reap the rewards of landscape-scale habitat restoration that the plan outlines. Also, the initiative is integrated with other species management plans that have parallel objectives, such as Partners in Flight and the North American Waterfowl Management Plan. More information about the NBCI is available at [www.qu.org/seqsg/nbc/nbc.cfm](http://www.qu.org/seqsg/nbc/nbc.cfm).

## Learning More...

*Native Warm Season Grasses for Virginia and North Carolina* is a booklet that lists the detailed specifications for preparing and planting a meadow. Contact the Virginia Department of Game and Inland Fisheries at (804) 367-0904 for a free copy.

Virginia Native Plant Society, [www.vnps.org](http://www.vnps.org).

*Landscaping with Native Plants*, an EPA page written for the Great Lakes region but with good links and information useful to Virginians, at [www.epa.gov/greenacres/](http://www.epa.gov/greenacres/).

*Wild Ones* Natural Landscapers Ltd., a nonprofit that promotes environmentally sound landscaping practices, at [www.for-wild.org/](http://www.for-wild.org/). See their online *Handbook* for landscaping with grasses and other natives.

*Prairies Forever* [www.prairies.org](http://www.prairies.org), a nonprofit dedicated to promoting the ecological and cultural significance of the American prairie

*Seed Suppliers*—several seed companies offer fact sheets or helpful tips and techniques for planting a grass and wildflower meadow. Here is a sampling (not an endorsement):  
[www.prairienursery.com](http://www.prairienursery.com)  
[www.sharpseed.com](http://www.sharpseed.com)  
[www.stockseed.com](http://www.stockseed.com)  
[www.ernstseed.com](http://www.ernstseed.com)  
[www.prairiesource.com](http://www.prairiesource.com)

A dickcissel loudly chirps his presence from atop the flower of a common mullein plant.

Virginia  
Naturally

