



Palmetto



Planting a Wildflower Meadow

In the previous issue of *Palmetto*, I wrote about native grasses and my thoughts on wildflower meadows in general.* Here, I share my experiences in designing, installing, and managing a meadow of native plants.

Designing a Meadow

Although natural meadows (i.e. prairies) look random, they are not a random assortment of plants. The grasses and wildflowers present at any one time are the result of environmental conditions such as hydrology, rainfall and fire frequency – what ecologists call abiotic factors. Such factors are rarely constant in nature and subtle changes in any or all of them play an important role in determining what plants are present or absent. What you see as you look at a patch of natural meadow is a snapshot of the area’s abiotic factors at work. With a trained eye, you can make pretty good predictions about each patch’s site conditions by what is growing there – and you will notice these assemblages repeated over and over whenever specific conditions occur.



Above, left to right: This meadow was planted in July 2019 with butterflyweed (*Asclepias tuberosa*), Florida greeneyes (*Berlandiera subacaulis*), Maryland goldenaster (*Chrysopsis mariana*), lanceleaf tickseed (*Coreopsis lanceolata*), purple lovegrass (*Eragrostis spectabilis*), stiff sunflower (*Helianthus radula*), shortleaf gayfeather (*Liatris tenuifolia*), black-eyed Susan (*Rudbeckia hirta*), azure blue sage (*Salvia azurea*), lyreleaf sage (*Salvia lyrata*), and helmet skullcap (*Scutellaria integrifolia*). One year later, Maryland goldenaster and Florida greeneyes have reseeded and the grasses and wildflowers have begun to fill in. Photos by Andrea England.

*Huegel, Craig. 2020. *Meadows for Home Landscapes: More than Just Wildflowers*. *Palmetto*, 36(1): Pp 4-7.

Spring and fall views of a meadow show how blooming changes with the seasons. In the spring, black-eyed Susan (*Rudbeckia hirta*), softhair coneflower, (*Rudbeckia mollis*) and helmet skullcap (*Scutellaria integrifolia*) are in bloom. During the fall, purple lovegrass (*Eragrostis spectabilis*), Chapman's gayfeather (*Liatris chapmanii*), spotted beebalm (*Monarda punctata*), stiff sunflower (*Helianthus radula*), and splitbeard bluestem (*Andropogon ternarius*) stand out. Photos by Andrea England.



All of this is important as you design your own meadow. It is paramount that you understand your site conditions. You need to choose plants that will work together as a community. This does not mean all the plants you select must grow together naturally in the wild – just that they are adapted to similar conditions. Few of us get the chance to landscape areas where we need to consider the fire ecology of our plantings and for the vast majority of us it is virtually impossible to significantly modify the hydrology. What all of us can evaluate up front are sunlight and soil conditions.

Sunlight and Soil

Meadows – everything from open marshes to dry prairies, almost universally occur in full sunlight. Plants feed on sunlight and meadow plants are generally voracious feeders. You can sometimes force a plant to survive in suboptimal light conditions, but it will rarely flower and grow the way it's supposed to. Plants that don't get enough light eventually weaken and perish before their time. If your goal is to make a diverse collection of native grasses and wildflowers, choose an area that gets ample sunlight – a half day or more.

You'll also want to understand your soil conditions and realize these might change in different parts of your property. As a transplanted Midwesterner, I came to Florida believing that all my landscaping projects were occurring in sandy soil. Over the years, I've come to understand there are a lot of important nuances in the definition of sand. The sands of Florida scrub and sandhill are generally "pure" sand. Pour a cup of water on them and the water disappears faster than my bank balance during a good plant sale. None of my former landscapes had sands that acted that way. When they were dry on the surface, they were often dry many inches below that too. When I watered these soils, water would stand on the surface for minutes without soaking in, or it would flow off the surface to a different spot at a slightly lower elevation. This is because areas once covered by turf grasses or ruderal plants build up organic particles and dry organics repel water until they are fully saturated. They also hang on to the water once they are wet and impede the natural exchange of oxygen necessary in the root zone for plants to breathe. It is difficult to adequately change the percolation rate of soils so it is important to work with what you have. Do not use plants (like many of our scrub species) in areas that stay too wet during the rainy summer months or choose plants that can't possibly get the moisture they need in the drier months of April and May. Select a palette that has similar sun and moisture needs and your chance of long-term success will be greatly enhanced. There are other abiotic factors like soil pH that can play a role, but I've never found them to be even marginally as important in a meadow planting as soil moisture and sunlight.

Selecting Plants

Once you've chosen your site and understand the abiotic factors, choose the right plants for these conditions. This is a deeply personal endeavor. Plants should function together as a community in your specific site conditions, but they also need

to satisfy your goals and personal aesthetics.

As I discussed in the previous issue of *Palmetto*, different pollinators have different habitat needs and host plants. All meadows should rely heavily on native grasses to provide the structure and habitat natural meadows are known for. What grasses you select will depend on soil moisture, the size of your planting area and the habitat requirements of the wildlife you wish to provide for.

Most natural grass-dominated meadows have a mixture of native grasses and each has a role to play. Short grasses, like the lovegrasses (*Eragrostis* spp.), wiregrasses (*Aristida* spp.) and dropseeds (*Sporobolus* spp.) provide important structure to wildflowers and stay low enough to not compete with them for space and sunlight. Few, however, serve as hosts for grass-dependent butterflies. That role is taken up mostly by taller bunch grasses such as bluestems (*Andropogon* spp.) and Indiangrasses (*Sorghastrum* spp.). These grasses are some of our showiest species, but they will take up space and should be used judiciously. I like to plant these in small clumps of not more than 5 per clump, and in clumps no closer than 3 feet apart. In smaller landscapes I don't plant more than 3 per clump. In large acreages it would be sensible to plant clumps of grasses in larger aggregations. Small grasses can be planted denser and closer together.

In a way, the wildflowers you select are less important than grasses are. Very few native wildflowers are wind pollinated. Instead, they attract the attention of native bees, butterflies, and other pollinators. Some, like milkweeds (Apocynaceae) and members of the carrot family (Apiaceae) serve as host plants, so it is important to match these types of wildflowers with your personal goals of helping specific butterfly or moth species.

Blooming Season, Flower Color and Shape

When selecting wildflowers, an important consideration is blooming season. A fully functioning wildflower meadow, like in nature, will have flowers to pollinate for the greatest number of months possible. As your landscape progresses through the seasons, different wildflower species will come and go, but something should always be blooming to provide nectar and pollen. A few, like Spanish needles (*Bidens alba*), seem to be in bloom forever, but most have distinct flowering seasons. Information on blooming season is widely available and is best augmented by field trips to natural areas in your vicinity to see what is blooming as the seasons change.

Wildflowers in natural areas have a wide diversity of different colors and shapes. The truth is, there is no universal wildflower designed for pollinators and there shouldn't be. If you watch an area of wildflowers long enough, you are likely to see that different pollinator species tend to segregate themselves from others by the flowers they spend the most time on. Bees tend to prefer yellow flowers while butterflies like purple and blue. Hummingbirds prefer red flowers, but there are a great many exceptions. What is almost universal, however, is that most pollinators prefer to get more bang for their buck by using flowers that are closely clustered together and simple in flower structure, seeking out lots of floral tubes in a short

flight distance. This is one reason why nearly everything in the Asteraceae is a wonderful choice for wildflower gardens.

Installing a Meadow

Once you've selected your location and decided on which plants to use, it is time to consider the installation itself. For most people, the selection process is what holds all of the interest. Very few of us get to create our landscape on a blank palette of native soil – most have to first remove a covering of turf grass and/or ruderal weeds. Removing the covering of any nonnative area exposes both native and nonnative weed seeds. Weeds are simply plants biologically designed to grow rapidly in recently disturbed soils and they persist by dispersing large numbers of seeds. As superb competitors, they will overwhelm everything else, and left alone, you will always have them in large numbers. Weeds must be dealt with harshly if you want diversity and a balanced community of native wildflowers and grasses. This includes weedy species such as horseweed (*Conyza canadensis*), dogfennel (*Eupatorium capillifolium*) and yes, even Spanish needles. It matters little if these are native or not, or whether they have some pollinator value. I've tried leaving Spanish needles alone in a mixed planting, but over time, it always crowds out everything else. I'm glad it grows across the street on the roadside, but I don't need it in my planting areas.

You cannot rush a planting if you want it to succeed. You need to remove the existing turf and then weed the bare soil assiduously for whatever time it takes. There are many ways to reduce turf and weeds. What you choose to do depends largely on your personal philosophy and your time and physical limitations. In my new landscape of 18 x 36 feet, I removed the surface vegetation by using a spade. This required a lot of exertion, but I chose not to use herbicides. In large areas like the wildflower meadow I'm installing at Rosebud Continuum, they are often necessary to some extent. Some people choose to solarize their area by covering it with black plastic and burying that with a deep layer of mulch. Regardless, once the soil is exposed, weed seedlings will grow in the bare soil. These need to be pulled as quickly as they appear or they will rapidly mature, produce more seed, and you will soon be left with what you started with. Creating a meadow requires a great deal of commitment.

Even in my relatively small meadow at home, I chose to do the installation in steps. Over the years, I have found it to be most effective to tackle parts of the meadow planting, get it under control and then move on to the next section. Once each section was relatively weed-free and devoid of most of the weed-seed bank, the plants I added were able to prosper and their growth helped to keep future weeds from entering.

A natural meadow setting soon finds its own equilibrium regardless of how you plant it, but you need to put the original pieces in place first for this to happen. Most, if not all, of your new plants are best incorporated in groupings. Create the basic framework with grasses. They should be planted first to provide the structure that will persist over time, then plant wildflowers into the spaces between them. If you plant wildflowers in clusters to start with, they will be pollinated more effectively. Some



Spotted beebalm (*Monarda punctata*), stiff sunflower (*Helianthus radula*) and eastern silver aster (*Symphyotrichum concolor*) are supported by purple lovegrass (*Eragrostis spectabilis*) and Florida mock gamagrass (*Tripsacum floridanum*). Photo by Andrea England.

reseed easily and these will move around quickly. Species such as common tickseed (*Coreopsis leavenworthii*) and black-eyed Susan (*Rudbeckia hirta*) are always staples in my wildflower plantings, but they find their own spots once they mature and set seed. Some, like Stoke's aster (*Stokesia laevis*), will grow outward from their basal leaves and fill the areas around them. Others, like butterfly milkweed (*Asclepias tuberosa*) rarely reseed in my garden, so I plant them in the locations where I want them to grow. Take some time to learn the habits of your plants before you plant them.

Planting is best done in the cooler winter months or after the summer rains become regular to keep the soil moist. It is very difficult to plant during the typically hot and dry months of April and May. I prefer to plant established plants. Many of the best can be found at native plant nurseries and these folks are the people that share our commitment. I support them whenever I can. Planting seeds directly into bare ground seems to be an inexpensive approach, but most seeds in nature do not develop into mature plants. Some do better than others, but even then I suspect that fewer than 10% will mature. Planting plants requires some investment up front, but it is not necessary to plant the entire area that way. For example, I added savanna blazing star (*Liatris savannensis*) to a wildflower area in my former landscape. I started with six plants I had grown from seed. Within three years, I had at

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least 50 and I was forced to weed some of them out. I like the compromise approach that involves purchasing plants or seed, growing them in controlled conditions in a flat or pot filled with potting soil, and adding the seedlings to the garden only after they are established in the pots.

Managing a Meadow

A planting of anything, native or not, requires management. There will always be some weeds that blow in from the outside world and there will be species that you want, like my blazing star, that need to be thinned out to ensure space for less aggressive species. In nature, meadows of all kinds burn with some regularity. Fire ensures balance, fertilizes everything in the area and dethatches grasses. However, few of us have the luxury of burning our suburban meadows each year to accomplish this. I find that many grasses need to be dethatched manually to maintain their health. I do this each spring before the new blades start putting on their major growth spurt. Do not do it in fall or winter as many creatures use dead grass for cover. If you have a larger area, you can use a dethatching rake.

I do not have an irrigation system and my plantings are designed to thrive without one, but I keep a hose nearby for extended droughts, especially during the first year when plants are establishing themselves. All plants need water to establish their root systems and it may take months for some to do so effectively. I also never fertilize, but I work hard to develop healthy soils. This cannot be done using woody or inorganic mulches designed to prevent weeds. By not decomposing, such mulches do nothing to add nutrients to the soil. Sterilizing your soil to kill pests also kills the soil's micro-fauna and -flora; the very things that plant root systems depend on.

I do not mulch my wildflower meadows. Normal leaf fall enhances the natural fertility of the existing soil, but adding additional mulch severely impedes the ability of native wildflowers and grasses to reseed. Of course, this means that I spend some time each week looking for the bad actors and pulling them by hand while they are still small. Nature takes its own course over time. My current wildflower area barely resembles what it looked like last year before my plants reseeded themselves, but all of the parts are still there. I find that spending time in my plantings is therapeutic and I look forward to those times I can set aside to peruse its status and make a few adjustments. Now in its second year, the area produces few weeds to pull, since the time I spent upfront and my regular attention to it have paid off. The developing grasses help reduce bare areas where weeds would more easily find a foothold and leaving the dead stems of the wildflowers that die back to the ground each winter helps with that too.

I wish all of you luck as you move forward to create living landscapes. Wildflower meadows are not for the lazy gardener or the person who simply wants to stop taking care of their yard. Keep your eyes open to the very real issues you will be taking on. Don't jump into this blindly or with a zeal unmatched by the energy it will take. Value plant diversity; it always promotes wildlife diversity.

Take the time upfront to set objectives for everything, strive to meet those objectives and be willing to make adjustments along the way if something that made sense once turns out to not be working as well as you planned. I have made a great many mistakes in the more-than three decades since I began working with native plants and I am sure to make more, but I have learned more from my mistakes than my successes. If I can save you from making some of the same mistakes before you get started, I will have succeeded with something by writing this article. Enjoy your adventure.

References

Minno, M. C., Butler, J. F. and Hall, D. W. 2005. Florida butterfly caterpillars and their host plants. Gainesville, FL. University Press of Florida.

Further Reading

Daniels, J. C. 2000. Your Florida guide to butterfly gardening: a guide for the deep south. Gainesville, FL. University Press of Florida.

Gerberg, E. J. and Arnett, R. H. Jr. 1989. Florida butterflies. Baltimore, MD. Natural Science Publications, Inc.

Hammer, R. L. 2015. Attracting hummingbirds and butterflies in tropical Florida. Gainesville, FL. University Press of Florida.

Huegel, C. N. 2012. Native wildflowers and other ground covers for Florida landscapes. Gainesville, FL. University Press of Florida.

Minno, M. C. and Minno, M. 1999. Florida butterfly gardening. Gainesville, FL. University Press of Florida.

Shepherd, M., Buchmann, S. L., Vaughan, M. and Black, S. H. 2003. Pollinator conservation handbook: a guide to understanding, protecting, and providing habitat for native pollinator insects. Xerces Society.

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NOTE: Meadow is used in this article to define a mix of native grasses and herbaceous flowering plants, not to indicate a type of ecosystem. To learn more about Florida's natural communities, see: www.fnai.org/PDF/AA_Short_Descriptions_Final_2010.pdf and *Ecosystems of Florida*, edited by R. L. Myers and J.J. Ewel, University Press of Florida.