# WILD GARDEN MANUAL

NATIVE, LOCAL-ECOTYPE GARDENING FOR SCHOOLS & OTHER INSTITUTIONS IN THE WASHINGTON DC AREA EARTH SANGHA 2018



## About the Earth Sangha

The Earth Sangha is a nonprofit 501(c)(3) charity based in the Washington, DC, area and devoted to conservation. We work in the spirit of Buddhist practice, but our members and volunteers come from a wide variety of religious and secular backgrounds. ("Sangha" is a Buddhist term for community.) The Earth Sangha was founded in 1997 and currently works in two regions: the DC area, and in the Dominican Republic, along a section of the DR / Haiti border, where we run the Tree Bank, an agroforestry and forest conservation program.

In the DC area, our Wild Plant Nursery is the region's largest ecological restoration nursery. Complete program information is available on our website, at earthsangha.org.

Contact us at: Earth Sangha, 10123 Commonwealth Blvd., Fairfax, VA 22032-2707. (This is our mailing address; for the nursery address, see our website.) Call us at (703) 764-4830, or send email to info@earthsangha.org.

For information on how to volunteer or meditate with us, see our website. You can also support our work by becoming a member. Membership starts at \$35 per year, and gets you

discounts on plants from our nursery. See the Donate page of our website.

**One of the best:** the Earth Sangha is recognized by the Catalogue for Philanthropy as "one of the best small charities in the Washington, DC, region."



## About This Booklet

This little guide is the product of many years of trial and error. Since 1998, the Earth Sangha has been propagating native plants directly from the wild — from seed and spores that we collect, with permission, from northern Virginia's natural areas. That effort is what drives our Wild Plant Nursery, a unique resource for local conservation. Over 300 native species are now in the nursery system, all of them grown from local forests and meadows. The use of such "local ecotype" stock is a best practice in ecological restoration because that helps to maintain genetic fitness and local adaptation in the species planted.

Since 2004, land managers have used our nursery stock to help maintain natural areas, and to restore wild vegetation to developed landscapes — to lands managed by public agencies, schools, HOAs, and other institutional landowners in the DC area. If you're connected with such an institution, then this

#### Photos

**Front cover:** Meadow in the Deep Cut Tract of Manassas National Battlefield Park, in July 2016. **Back cover:** A section of the Earth Sangha's Wild Plant Nursery in July 2014. **Above:** Part of the meadow garden at the home of Chris and Lisa Bright, in September 2016. **At right:** one of our first schoolyard plantings, done in collaboration with another local nonprofit, Lands and Waters, at Kimball Elementary School in Washington, DC, in June 2005. (Deep Cut photo by Matt Bright, other photos by Chris Bright.) guide is for you. In it, you'll find practical advice for creating and maintaining a wild planting. You'll also find species lists for four common landscape scenarios. These lists — for our Schoolyard Garden Kits — can help make your planting more like a wild plant community. That will make it more stable, and more useful for both conservation and education.

The lists are written for Fairfax County but they apply broadly to the DC area, including Arlington, Prince William, and Loudon Counties in Virginia, and Montgomery and Prince George's Counties in Maryland, as well as DC itself, of course. Contact us if you have questions about a list.

In addition to the kit lists and planting advice, the guide includes a resources section on local plant conservation. And we've drawn up, from our nursery inventory, a long list of local natives that are common, adaptable, and not hard to grow. (For the full nursery inventory, see our website.)

Even though the guide is written primarily for institutional landowners, it may also interest home gardeners, and we encourage them to use it.

This guide and the Schoolyard Garden Kit program as a whole were funded in part by a generous grant in 2016 from the Botanical Artists for Education and the Environment.

A pdf version of the guide is posted on our website. The pdf may contain updates. The paper version is printed on 100% post-consumer-waste recycled stock that is process chlorinefree and manufactured entirely with wind-generated electricity. This guide © 2018 by the Earth Sangha. All rights reserved.

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# WHY CREATE A WILD GARDEN?

ost native-plant gardens are just random assortments of nominally native species that the gardener happens to like. Usually the selections are limited to forbs (herbaceous plants that aren't grasses or grass-like species) and maybe a shrub or two. Often, the plants are cultivars rather than wild forms. Such assemblages have little in common with natural plant communities. Here are seven ways in which a wild garden improves on this situation.

**1. A meaningful definition of "native."** Our approach uses only species that occur naturally in the DC area. We also try to adjust species choices *within* the region, so that, for example, a piedmont garden doesn't contain plants that grow naturally only in the coastal plain.

**2. Local adaptation.** All of our plants are propagated from local natural areas, so they're the real, local, wild stuff. They're not cultivars, and they're not derived from some population hundreds of miles away. They express the genetics of the local, wild populations from which they come.

**3. Similarity to wild plant communities.** Our kits supply appropriate species in roughly natural proportions. Common species are emphasized. Broadleaf herbaceous plants intermingle with grasses. Different species grow to different forms and heights, creating a structural variety that is similar to the wild.

**4. Improved soil function.** The roots of those native grasses reach deep into the soil, breaking up clay, thereby admitting more air and water. (Turf-grass roots are too shallow to do this.) The result is more biological activity in the soil and greater soil-water reserves during dry periods. Native grass roots also help draw minerals upwards, where, eventually, they become available to other plants, and to the animals that feed

on them — and when those roots die, they increase the soil's carbon content.

**5. Greater wildlife value.** A wild garden is likely to be more useful to birds, native nonpest insects, and various other small creatures that inhabit our landscape. Our local, wild plant communities have sheltered and fed these creatures for thousands of years. In some cases, plant and animal species are tightly linked to each other.

**6. Greater educational value.** A wild garden is a window into a part of our world that is rapidly disintegrating. It can also introduce students to methods for reversing that loss.

**7. Greater cultural value.** By reestablishing wild plants in a built landscape, you are helping to make our local, wild flora more accessible to people. That's an important step in redefining wild plants as both a natural and a cultural resource.

### HOW DOES THE KIT APPROACH WORK?

This guide defines four kits, each matching a common landscape scenario. Each kit includes a set of appropriate, locally native plants. All of these plants are available at our Wild Plant Nursery, where they are being propagated from local natural areas. The kit consists of those plants, this guide, and advice. That's what we supply. You supply any hardscape, tools, volunteers, and a design if you want one.

Where to start? First, get familiar with this guide. Then learn about your site (see opposite page) and choose the appropriate kit. Next, read the "Step by Step" Section on pages 12-13. If you need to, use the "Contact Organizer" on page 28 to get in touch with us. We're here for that — and we look forward to helping you make your project a wild success.



# UNDERSTANDING YOUR SITE

Even if your site is just turf, it has things to tell you — things that you should know before you try to plant it. We recommend the following nine tasks as a way to get familiar with your site. You should record your observations in a notebook.

**1. Get the dimensions.** Measure the site with a field tape and note what, if anything, forms its perimeter — "school building along northern edge," and so on.

**2.** Look up! Don't plant trees or shrubs under power lines. Herbaceous plants may be fine — as long as you don't mind disruption when the lines need attention.

**3. Locate cables and conduits.** Contact Miss Utility, then photograph and draw the results if there are cables or pipes running nearby. Your drawing should include measurements. Don't work over cables or pipes.

4. Define the vegetation. Next, note down what's growing on your site if it isn't just turf. Is there anything really invasive? Look also at nearby vegetation, especially trees. How close are they and what species are they? This is important because different species react differently to root disturbance and some species may seed themselves into the site after the soil is disturbed. If you have questions, contact us. (See page 28.)

**Photos:** At left, a large meadow and tree planting goes in at Daniels Run Elementary School, in Fairfax City, in October 2006. This was another Lands and Waters project. (See also the photo caption on the inside front cover.) The plants came from the Sangha's Wild Plant Nursery. Below, the same area, seen from about the same position, in August 2017. So much better than turf — for so many reasons! (Photos by Chris Bright.)

**5. Dig in.** Check the soil by digging a few test holes. One foot or so is deep enough. One of the worst sites that we ever worked on looked like an ordinary expanse of turf — until we discovered an old asphalt road-bed less than two inches below the surface! Pour a bucket of water into each hole and watch it drain. If the holes drain very slowly, that's something to note.

**6. Find the light.** How much direct light reaches your site during the growing season and from which direction? (Our strongest light comes from the south.) Notice also what's shading your site. Building shade is solid and constant; tree-line shade is not. If you're looking at a forest edge when trees are not in leaf, remember to factor in growing-season shade.

**7. Note the slope.** Does your site slope much? If so, which way is it oriented? Southern slopes have the harshest light.

**8. Follow the rain.** Is your site shedding run-off? If so, take a look at where the water goes and check for erosion. (Erosion isn't always bad, but it's something to watch.) Or is your site receiving run-off? If so, that's relevant to soil drainage. (See Item 5, above.) You might want to visit the site during or just after a heavy rain to understand the drainage pattern.

**9. Add people.** Will the planting be convenient for school activities? How do people currently interact with the site? Are there "desire paths" (impromptu trails) running through it? Does litter suggest lunch? You may want to discourage some uses and work with others. For instance, you might accommodate a desire path so that it doesn't reappear later, at the expense of your planting. And don't forget the most common use of all: visual use. How will the planting look to people who see the site as part of their regular routine? Good PR is very important for long-term maintenance.





# KIT 1: SUNNY, WELL-DRAINED MEADOW

A tonce ancient and ephemeral, mid-Atlantic meadows have been essential habitat for many native plants and animals for thousands of years. But these were mostly fire-mediated communities, soon reclaimed by nearby forest. A fire would open up a patch of forest and a meadow would form; as the forest returned, the meadow species would disappear, only to colonize another burn or blow-down elsewhere.

Today, of course, fire is no longer a natural force in our region, and most planting projects aim to reestablish tree cover. Meadows have dwindled as a result. But you can still find some in more-or-less natural form, although these must be artificially maintained, usually by mowing. A wonderful example is the meadow shown above, at Runnymede Park.

In this bug's-eye view, you can see something of the formidable plant diversity typical of local meadows. Here, the purple flowers of broad-leaf ironweed (*Vernonia glauca*) vie

**Photo:** Midsummer canopy of a sunny meadow in Runnymede Park in Herndon, Virginia. (Photo was taken in August 2016 by Matt Bright.) with the yellow blooms of various goldenrods (*Solidago* species). Below them, dense blazing star (*Liatris spicata*) tangles with beaked panic grass (*Coleataenia anceps*), while Indian grass (*Sorghastrum nutans*), one of our region's tallest native grasses, sends its spikes overhead. In the fall, those spikes will be heavy with seed. Looming in the background, a stand of Virginia pine (*Pinus virginiana*), would likely reclaim this meadow in a decade or two, under natural conditions. If our spectator bug were to flit off to another patch of the same meadow, it would likely see a different set of species.

Healthy meadows benefit our entire landscape. Native bunch-grasses produce deep roots, which break up soils and boost their capacity to hold water. The flowers of meadow forbs are important for many native pollinating insects, as is the seed for birds. And in the winter, the dead leaves and stems provide important habitat for many of these creatures. By creating a native schoolyard meadow, you can provide some of these ecological benefits, while offering students a window into this complex and largely hidden world. **S**tart this planting with 60 pots of the following forbs and grasses. The planting area should be about 120 square feet. Measure — don't guess! (In parentheses: eventual height / minimum space, as the diameter of a circle with the plant at the center. You can plant looser than this but not tighter.)

#### Common Forbs (25 pots):

Asclepias syriaca: Common Milkweed (3-5 ft / 1 ft) Chamaecrista fasciculata: Partridge Pea (1 ft / 1 ft; this is an annual that will reseed itself.) Chrysopsis mariana: Maryland Golden Aster (1-2 ft / 1 ft) Doellingeria umbellata:

Flat-topped White Aster (4 ft / 1.5 ft) Eupatorium hyssopifolium:

Hyssop-leaved Boneset (3-4 ft / 1 ft) E. rotundifolium: Roundleaf Thoroughwort (3 ft / 1.5 ft) Potentilla canadensis: Dwarf Cinquefoil (6 in / 1 ft) Pycnanthemum tenuifolium:

Narrow-leaved Mountain-mint (3 ft / 1 ft) Solidago juncea: Early Goldenrod (2-3 ft / 1 ft) S. nemoralis: Gray Goldenrod (1-2 ft / 1 ft) Symphyotrichum patens: Late Purple Aster (3 ft / 1 ft)

#### Site-Specific Forbs (10 pots; we will help choose):

Baptisia tinctoria: Yellow Baptisia (1-3 ft / 1.5 ft) Coreopsis verticillata: Thread-leaf Coreopsis (3 ft / 1 ft) Liatris spicata or L. pilosa: Blazing Star (2-3 ft / 1 ft) Rudbeckia fulgida: Orange Coneflower (3 ft / 1 ft) R. hirta: Black-eyed Susan (2-3 ft / 1 ft) Silphium asteriscus: Whorled Rosinweed (4-5 ft / 1.5 ft) Solidago bicolor: Silverrod (2-3 ft / 1 ft) S. erecta: Erect Goldenrod (2-3 ft / 1 ft) S. ulmifolia: Elm-leaved Goldenrod (3 ft / 1 ft) Vernonia glauca: Broad-leaf Ironweed (4-6 ft / 1.5 ft)

#### Grasses (25 pots):

Coleataenia anceps: Beaked Panic Grass (2-4 ft / 1 ft) Elymus glabriflorus: Southeastern Wildrye (3 ft / 1 ft) Eragrostis spectabilis: Purple Lovegrass (1-1.5 ft / 1 ft) Schizachyrium scoparium: Little Bluestem (2-4 ft / 1.5 ft) Sorghastrum nutans: Indian Grass (3-6 ft / 1.5 ft)

#### This kit costs \$300. To order it, see page 28.

# Is this kit right for your site? Make sure before you plant!

This kit is meant for a site that:

- Covers about 120 square feet (order a smaller version for a smaller site or multiple kits for a larger site);
- V Drains well (there should not be any standing water);
- Is clear of trees; and
- Gets at least four hours of direct sun daily during spring and summer.

## Add Patience

There's no such thing as an "instant meadow." Most meadow species regrow from the ground every year, but that doesn't mean that you should expect strong growth right away. During the meadow's first year or so, the most important growth is occurring underground. That's true of both grasses and forbs. And until your plants have a strong root stock, their topgrowth may not look like much. But don't be deceived! First-season growth does not predict subsequent years.

What to do while waiting for all that exuberant growth? Learn to weed! No garden maintains itself, and maintenance is especially important for new plantings. Once you've disturbed the soil, you will likely have to contend with a wide and unwelcome assortment of weeds. Learn to identify them and get used to removing them. Make sure that you can distinguish your plants from the weeds before you remove anything! For more on maintenance, see page 20.

**Photo:** Monarch butterflies feed on various goldenrod species during late summer, in a powerline meadow in the Lorton section of Fairfax County, Virginia. Monarch caterpillars feed only on milkweeds but adult monarchs take nectar from a wide variety of plants. That's why healthy native-plant diversity is essential for healthy monarch populations. (Photo was taken in September 2014 by Chris Bright.)



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# KIT 2: FOREST EDGE

Development in our region has left many forests fragmented, with far more edge than core. The expanding edge-effect has tended to push out the many native forest herbs that are better adapted to core conditions than to the harsher edge environment. At the same time, the extra edge is favorable habitat for generalists, especially invasive alien species. Once established, the invasives put further pressure on the natives — competing with them for light, water, and nutrients. Sometimes the invasives reach far into the forest.

Of course, our forests have always advanced and retreated, but natural edges are generally much less abrupt, and home to many more plant species, than edges left by development.

In our region, you can still find high-quality edge habitat, as in the photo above. This edge, under an oak – hickory canopy at Manassas National Battlefield Park, contains virtually no invasives. Here, the variation in light and soil conditions supports a diverse groundlayer. Among the grasses and grasslike plants, you can find: bottlebrush grass (*Elymus hystrix*), deertongue grass (*Dichanthelium clandestinum*), and several sedges (*Carex* species). Among the forbs (broad-leaved herbaceous plants) are three species of goldenrod — blue-

**Photo:** Late summer forest-edge groundlayer at Manassas National Battlefield Park, in Manassas, Virginia. (Photo was taken in September 2016 by Lisa Bright.) stemmed, erect, and silverrod (respectively *Solidago caesia, S. erecta*, and *S. bicolor*) — white wood aster (*Eurybia divaricata*), blue mistflower (*Conoclinium coelestinum*), and wild pink (*Silene caroliniana*). One of the region's most common ferns is growing here too: Christmas fern (*Polystichum acrostichoides*), so named because it is green year-round, even in mid-winter.

A noteworthy feature of this groundlayer is its occasional patches of bare soil. People frequently assume that exposed soil is inherently bad or "unnatural." Not so. Little patches of bare soil are common in forests, sometimes because of steep slopes, and sometimes because the trees don't leave enough nutrient and water to allow for a dense groundlayer.

Farther into the forest, at the top of the photo, you can see a portion of the understory, or shrub layer. This stand is home to two large shrub species: the American hazelnut (*Corylus americana*), which produces nuts consumed by many wild animals, and witch-hazel (*Hamamelis virginiana*), our only native winter-blooming shrub. Three tree species also occur in this understory: hornbeam (*Carpinus caroliniana*), flowering dogwood (*Cornus florida*), which flowers in white, and redbud (*Cercis canadensis*), whose brilliant purple flowers are one of the glories of the mid-Atlantic spring.

Forest edges may now be too common overall, but healthy edge habitat is increasingly rare. If you handle your edge project well, it could become an important natural space.

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Begin this garden with 15 pots of the following forbs and grasses. The planting area should be about 30 square feet. (In parentheses: eventual height / minimum space, as the diameter of a circle with the plant at the center. You can plant looser than this but not tighter.)

#### Forbs (10 pots):

Chamaecrista fasciculata: Partridge Pea (1 ft / 1 ft; this is an annual that will reseed itself.))
Clinopodium vulgare: Wild Basil (2 ft / 1 ft)
Eurybia divaricata: White Wood Aster (1 ft / 1.5 ft)
Eutrochium fistulosum: Joe-Pye Weed (4-8 ft / 2 ft)
Helianthus giganteus: Giant Sunflower (3-8 ft / 2 ft)
Oenothera fruticosa: Sundrops (2-3 ft / 1 ft)
Penstemon digitalis: Foxglove Beardtongue (2-3 ft / 1 ft)
Salvia lyrata: Lyre-leaved Sage (2-3 ft / 1 ft)
Solidago caesia: Blue-stemmed Goldenrod (1.5 ft / 1 ft)

#### Grasses (5 pots):

Brachyelytrum erectum: Bearded Shorthusk ( 2 ft / 1.5 ft) Chasmanthium laxum: Slender Oatgrass (3 ft / 2 ft) Dichanthelium clandestinum:

Deertongue Grass (2-3 ft / 2 ft) Elymus hystrix: Bottlebrush Grass (3 ft / 1 ft)

This kit costs \$75. To order it, see page 28.

## Is this kit right for your site?

This kit is meant for a site that:

- ✓ Covers about 30 square feet (order a smaller version for a smaller site or multiple kits for a larger site);
- Drains reasonably well (moist soil is fine but there should not be any standing water);
- Borders a stand of trees; and
- Is mostly in light shade but gets a few hours of direct sun daily during spring and summer.

**Photo:** The hickory horned devil, the caterpillar of the regal moth, is one of North America's largest caterpillars — just as the regal moth is one of our largest moths. The caterpillar can grow to nearly 6 inches, but despite its appearance, it is harmless. It feeds in the forest canopy on the leaves of a variety of native trees, including hickories, black walnut, ash, sweetgum, and persimmon. It is not rare, but it is rarely seen. You're most likely to find it in late summer, when it drops to the ground to dig in and pupate. That's what this one was presumably doing when we interrupted it for a quick photo shoot. (Photo was taken in August 2005 by Chris Bright.)

#### Work with the Forest - Not against It!

Forest plantings present special challenges. Unlike turf, a forest plot cannot be defined solely in terms of soil, water, and sunlight. Your planting is more likely to succeed — and benefit the forest, rather than damage it — if you try to work with the forest plant community.

To do that, you'll need to get familiar with that community before you plant. And the best way to begin learning about a forest is just to look up. What tree species form the canopy? Are they native or alien? If they're native, is the mixture natural or are many species growing out of habitat? (See pages 22-24 for some useful guides, or contact us if you need help.)

Next check the understory. Are there shrubs growing beneath the canopy and if so, what species are they? Are there tree saplings? Are they the same species as the canopy? If the understory is largely open, then you may have a deer problem, or maybe the area is being weedwhacked — or both.

Then look at the ground layer. Is there much growth there or is it barren? If the cover is primarily just one or two species, you'll need to know what they are. Is there duff — decaying leaves and twigs — on the forest floor or is it bare soil? (If the latter, the site is probably being disturbed by leaf-blowers.)

Next figure out how much of an invasives problem you've got. If your site is heavily infested, then invasives control should be part of your gardening routine. Manual control is probably your only option, since herbicides are generally prohibited on school grounds. Feel free to contact us for advice on how to proceed.

Other important agenda items: Learn to identify poison ivy! Ask the grounds crew not to leaf-blow the forest duff away, and try to get them to stop fertilizing adjacent turf. (They call it "fertilizer." We call it nutrient pollution. It's likely to favor invasives.) Don't remove dead wood; that's important habitat. And try to plant near the edge of the forest canopy; that will reduce damage to tree roots, and give your plants a larger share of soil nutrient and water.



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# KIT 3: RIPARIAN COMMUNITY

Riparian (water-side) plant communities are critically important for both terrestrial and aquatic wildlife. Vegetation at the water's edge helps aquatic organisms by stabilizing banks, slowing runoff in-flow, filtering out some pollution, cooling the water, and providing materials — especially leaves — that are essential for a healthy aquatic food web. For terrestrial wildlife, riparian vegetation creates habitat and provides foraging opportunities on both land and water.

Burke Lake, in Burke, Virginia, offers interesting opportunities to explore the riparian world, in part because this 218-acre lake is artificial — as are nearly all lakes in Virginia. Burke Lake is Fairfax County's largest reservoir; it was created in the early 1960s by damming South Run, a major stream in the Pohick Creek watershed. Over the past 50 years or so, the vegetation along the lake shore has rearranged itself into a natural riparian community, as you can see in the photo above. And, at least in this area, it has managed this without significant intrusion of invasive alien plant species, the scourge of our local riparian areas. Burke Lake is an encouraging example of an artificial change that has produced more or less natural consequences.

**Photo:** Late summer in a water's edge community in Burke Lake Park, in Burke, Virginia. (Photo was taken in September 2016 by Chris Bright.) The photo above shows a sample of growth along the Lake, where oak-dominated forest approaches the water's edge. Winding along between the forest and the water, this narrow ribbon of herbaceous vegetation shows a high degree of species diversity, which is typical of local riparian communities that are in good condition and that receive a substantial amount of direct light.

All of the major plant forms can be found here. Among the grasses and grass-like plants, there are broomsedge (*Andropogon virginicus*), deer tongue (*Dichanthelium clandestinum*), and various rushes (*Juncus* species). The rich complement of broad-leaved herbaceous plants includes (listing more or less from shorter to taller): seed box (*Ludwigia alternifolia*), round-headed bush clover (*Lespedeza capitata*), perplexing ticktrefoil (*Desmodium perplexum*), common boneset (*Eupatorium perfoliatum*), various goldenrods (*Solidago* species), New York ironweed (*Vernonia noveboracensis*), and joe-pye weed (*Eutrochium fistulosum*). Farther back, the shrub silky dogwood (*Cornus amomum*) finds a place here, and small specimens of several tree species, primarily red maple (*Acer rubrum*), persimmon (*Diospyros virginiana*), and various oaks (*Quercus* species) begin the transition to forest.

So don't let that soggy patch of failed turf discourage you. It may be the setting for a complex riparian community.

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**S** tart here with 15 pots of the following forbs and graminoids. The planting area should be 30 square feet. Remember: measure — don't guess! (In parentheses: eventual height / minimum space, as the diameter of a circle with the plant at the center. You can plant looser than this but not tighter.)

#### Forbs (7 pots):

Asclepias incarnata: Swamp Milkweed (3-4 ft / 1 ft) Helenium autumnale: Common Sneezeweed (3-4 ft / 1 ft) Lobelia cardinalis: Cardinal Flower (2 to 3 ft / 1 ft) Ludwigia alternifolia: Seedbox (2-3 ft / 1 ft) Mimulus ringens: Allegheny Monkeyflower (2-3 ft / 1 ft) Symphyotrichum lateriflorum: Calico Aster (3 ft / 1 ft) Vernonia noveboracensis:

New York Ironweed (3-5 ft / 1.5 ft)

#### Graminoids (grasses & grasslike species) (8 pots):

Carex lurida: Sallow Sedge (2 ft / 1 ft) C. squarrosa: Squarrose Sedge (2 ft / 1 ft) Cinna arundinacea: Common Wood Reedgrass (4 ft / 1 ft) Scirpus georgianus: Georgia Bulrush (4 ft / 1 ft)

This kit costs \$75. To order it, see page 28.

## Is this kit right for your site?

This kit is meant for a site that:

- Covers about 30 square feet (order a smaller version for a smaller site or multiple kits for a larger site);
- Drains slowly, is often moist, and may contain or adjoin standing water;
- May border a stand of trees or lie within the shadow of a building; and
- Is primarily shaded but gets an hour or two of direct sun daily during spring and summer. See Kit 4 if your site is sunnier.

**Photo:** A bumble bee feeds on swamp milkweed nectar in late summer, at Huntley Meadows park in Alexandria, Virginia. As with North American bees in general, our native bumble bee species are in widespread decline. According to the Xerces Society, a nonprofit dedicated to invertebrate conservation, more than a quarter of all North American bumblebees are at some risk of extinction. Bumble bees are important pollinators of many native plants, so the decline in bumble bee populations is likely to affect native-plant populations as well. (Photo was taken in August 2016 by Matt Bright.)

## Compacted Clay? Try Double-Digging

Bulldozer-compacted clay is a poor gardening medium, but here's an old method that can greatly improve it without adding top soil or other amendments.

Double-digging is labor-intensive, so it may not be practical for big projects, but it could certainly be used for a garden of 30 square feet. You shouldn't double-dig if your site is on a steep slope (because of erosion), or if it has many tree roots running through it (because of damage to the trees). But otherwise, the technique could improve your chances of success. Here's how it's done.

**Step 1:** using shovels, have your team lift the turf off the subsoil. Stab a shovel into the turf, lower the handle way down and stamp on the flange at the top of the blade to drive the blade along just under the turf. Then pry out the shovel-full of sod. Pile the sods upside down on a spot outside the garden. Don't just throw them anywhere — make piles.

**Step 2:** dig into the site as deep as you can, and pile all of the excavated soil outside the garden, along the garden edge. (Don't cover the sods.) Double-digging gets its name from the goal of digging a bed two shovel-blade lengths deep. That would be tough in compacted clay, but try to get at least a foot down. You may need mattocks for this. (See the caution about mattocks on page 19.) When you're finished, your garden will be a shallow trench with a heap of soil along at least one side.

**Step 3:** cover the trench floor with the sods, placed upside down. The sods are more active biologically than the clay, and more absorbent. Putting them at the bottom of the trench will help extend biological activity and water to a greater depth.

**Step 4, the fun part:** shovel all the clay back into the trench. Your crew should chop it up thoroughly as they go. The resulting mound of loose soil will contain more air, and will absorb more water, than the compacted clay that it replaced. That will allow for more biological activity, which will make the garden more fertile. No need for fertilizer! And don't worry about the mounding — the soil will eventually settle.



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# KIT 4: WET MEADOW OR RAIN GARDEN

A n immense but largely hidden cost of development in our region is the continual deterioration of our streams and wetlands. More buildings, roads, and parking lots produce more and more pollution-laden runoff every time it rains. The runoff scours out stream channels, pollutes the water, and raises water temperatures beyond what many native aquatic organisms can tolerate. Eventually, the pollution and choking sediment wash into the Potomac, and then the Chesapeake Bay. In our region, local governments sometimes "restore" stream channels, but doing so without addressing the causes of degradation is a very expensive and uncertain enterprise.

If you have an area that receives a lot of runoff, you can take some of the pressure off your local stream by creating a wet meadow or "casual" rain garden ("casual" in the sense that the garden hasn't been engineered to match its capacity with incoming runoff). Rain gardens do not have an exact natural analogue, since they are typically subject to bouts of flood and drought that alternate many times during the course of a single growing season. That's a somewhat unnatural pattern. But if your area drains slowly and gets plenty of light, you can model your planting on a wet-meadow scenario like this one.

**Photo:** Midsummer in a wet meadow at Huntley Meadows Park in Alexandria, Virginia. (Photo was taken in August 2016 by Matt Bright.) This area is part of Huntley Meadows Park, which includes the largest remaining non-tidal wetland in Fairfax County. Hundreds of plant and animal species live in the broad array of habitats that occur at Huntley. The spot shown here is not as scenic as the park's central marsh, but it, and places like it, play a critical role in mediating the overlapping ecologies of land and water.

In the foreground, a spicebush swallowtail (*Papilio troilus*) and a couple of bumblebees (*Bombus* species) forage for nectar on a swamp milkweed (*Asclepias incarnata*). Behind them a stand of woolgrass (*Scirpus cyperinus*) rises above a dense tangle of devil's beggar-ticks (*Bidens frondosa*) and various smartweeds (*Persicaria* species). That swallowtail is a good example of how different habitats link up: as a caterpillar, this species of butterfly feeds on spicebush (*Lindera benzoin*), a large shrub that grows in wet or moist forest, and sassafras (*Sassafras albidum*), a tree that can be found in many forest types. As an adult, it forages in open meadow, where nectar is easier to find. It's a creature of both meadow and forest.

Poor drainage makes for poor turf, but it's perfect for a wet meadow. Your site could help create a healthier connection between your grounds and the local stream. It could also help your students understand one of this region's most serious ecological problems.

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**S** tart here with 15 pots of these forbs and graminoids, then add 2 pots from the shrub list. The planting area should be about 60 square feet. You know this by now: measure — don't guess! (In parentheses: eventual height / minimum space, as the diameter of a circle with the plant at the center. You can plant looser than this but not tighter.)

#### Forbs (8 pots):

Eupatorium perfoliatum: Common Boneset (3 ft / 1 ft) Hibiscus moscheutos: Swamp Rose Mallow (4 ft / 2 ft) Lespedeza capitata:

Round-headed Bush Clover (3-4 ft / 1 ft) Rudbeckia laciniata: Green Coneflower (3-5 ft / 1 ft) Symphyotrichum novae-angliae:

New England Aster (3-4 ft / 1.5 ft)

Vernonia noveboracensis:

New York Ironweed (3-5 ft / 1.5 ft)

#### Graminoids (grasses & grasslike species) (7 pots):

Carex crinita: Fringed Sedge (2 ft / 1 ft) Coleataenia rigidula: Redtop Panic Grass: (3 ft / 1 ft) Dichanthelium clandestinum: Deertongue Grass (2-3 ft / 1.5 ft)

#### Shrubs (2 pots):

Aronia arbutifolia: Red Chokeberry (15 ft / 3 ft) A. melanocarpa: Black Chokeberry (15 ft / 3 ft) Cephalanthus occidentalis: Buttonbush (15 ft / 3 ft) Ilex verticillata: Winterberry Holly (15 ft / 3 ft) Rosa palustris: Swamp Rose (6 ft / 4 ft) Sambucus canadensis: Common Elderberry (15 ft / 3 ft)

#### This kit costs \$95. To order it, see page 28.

Note the shrubs! This is the only kit that includes woody plants. These shrubs will grow high but can be pruned — with care.

**Photo:** A young gray treefrog inspects a leaf of lizard's tail, an emergent aquatic plant, at our Wild Plant Nursery. As their name suggests, treefrogs are mostly arboreal. They usually spend their days in tree canopy and descend primarily in the spring, to chorus and mate. They prefer trees near standing water. This little guy probably developed from an egg laid in the nursery's aquatic section. He apparently had not found his tree yet. (Photo was taken in July 2015 by Lisa Bright.)

## Is this kit right for your site?

This kit is meant for a site that:

- ✓ Covers about 60 square feet (order a smaller version for a smaller site or multiple kits for a larger site);
- May drain slowly, is often moist, and may contain or adjoin standing water;
- 🖌 Is clear of trees; and
- ✓ Gets at least four hours of direct sun daily during spring and summer. See Kit 3 if your site is shadier.

## From Garden to Landscape

Your garden can be a positive influence well beyond its site. Here are three Big-Picture Benefits.

**Healthier Streams:** if your project is designed to absorb stormwater runoff, then you are probably helping your local stream. (A visit to that stream could be a useful gardening motivator.) In the DC area, runoff has converted many miles of once rich aquatic habitats into eroded, polluted ditches that are home to only the toughest organisms, many of them alien. Your garden could help reduce this degradation, at least a little, and maybe inspire additional gardens.

**More Habitat:** your garden could provide additional habitat to some local plant and animal species. All of the plants in our kit lists have local, wild populations, and many of those populations are in decline because of habitat loss. The same is true for many local native animals, such as birds and native insects. You can put some habitat back!

**Healthier Air:** if your garden is replacing turf, then it is probably reducing air pollution from mowing. Lawn mower engines are small but they are outsize polluters. It's estimated that one hour of mowing creates about as much air pollution as driving your 1.5-ton car from DC to Baltimore (about 40 miles). Mowing emissions reduction will reduce your school's carbon deficit — and provide a good reason to expand the garden in years to come.



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# STEP BY STEP ...

ow do you get from concept to an actual Wild Garden? In some cases, it's mostly just a matter of digging. In other cases, it takes a year or more of planning. The site itself is a factor in determining the difficulty, but in our experience, the big obstacles are usually institutional, not physical. Below, we've mapped out a somewhat idealized procedure that you can adapt to your situation.

**1. Do your homework.** Read this manual and note down any general questions that you have (as opposed to questions about the site or particular plant species). At the risk of sounding a little antique: a project notebook can be a great organizing tool, and will grow more valuable as the project develops.

**2. Explore your grounds.** If you don't already know where you want to plant, now is the time to walk the grounds with the project in mind. There may be several candidate spots. How do you evaluate what you're seeing? See "Understanding Your Site" on page 3. Don't sweat the details on your first pass. Just try to get a rough sense for the possibilities.

**3. Get preliminary approval.** We suggest obtaining preliminary approval as soon as you have a candidate site. (We can supply additional copies of this guide if that would help.) Things to emphasize: the importance of the concept (see pages



2 and 11), your willingness to adapt, and your interest in creating a garden team (see Step 7).

4. Get a date with Miss Utility. Assuming that the prior step didn't get you thrown out of the office, you're ready to focus on your candidate site. There's generally some way to accommodate even very unpromising sites, but the one make-or-break detail that you should investigate right away is the Miss Utility diagnosis. You can contact Miss Utility online or by phone, or your office may have a procedure for that. Be generous in your description of the relevant area, in case your first choice for a site has enough cable under it to run the NSA. If there are cables and conduits running everywhere, you might be able to split your project up, so that it covers the largest safe spaces, while leaving corridors of turf above the cables. Don't forget to photograph and diagram the Miss Utility markings.

**5. Define your site.** Next, gather some detailed site information. Follow the procedures on page 3. If your site is on a forest edge, see also page 7.

**6.** Choose a kit. You should now have enough information to choose the most appropriate garden kit (see pages 4-11). We'll help you if you're not sure.

**7. Recruit your team.** If you haven't already done so, now is the time to begin to embed the project into the professional life of your institution. Resist the impulse to treat the project as if it were just a single planting event. You need to organize for the long term, since the garden will not be a static artifact. For example, you're going to need people who can weed, which means that you'll need people who know the planting well enough to distinguish the weeds from everything else. And remember that the planting will need attention when school is out. See "Maintaining Your Garden" on pages 20-21. Where to look for team members? In classes, clubs, the PTA? Part of your job is to figure that out!

**8. Reach out.** As you begin to assemble your team, it's a good time to define all of your constituents, both favorable and not-so-favorable. Make sure that the grounds people understand what you're planning. Are people already using your site, in one way or another? If so, those people could be

**Photos:** At left, two monarch caterpillars chow down on a milkweed seedling at our Wild Plant Nursery. (Of course, we just let them eat!) At right, an adult monarch feeds from a field thistle at the Marie Butler Leven Preserve in McLean, Virginia. This is a native thistle, which we have included in the Preserve's main meadow. Monarch caterpillars can feed only from milkweeds (*Asclepias* species), but adults do best when they can forage from the flowers of a variety different native plants. (Left photo was taken in August 2010 by Chris Bright; right photo was taken by Matt Bright in September 2016.)

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# ... A PROCEDURAL PLANNER

important to your project. Do you plan to recruit students or teachers for your team? The "Key Resources" section (pages 22-24) might help orient them. And remember that people who see the planting regularly may have considerable influence over it, in ways that can be difficult to anticipate. See Item 9 in "Understanding Your Site," on page 3.

9. Plan. Work with your team to create a couple of simple documents and make a few basic decisions. The decisions: are you going to create a design? (See pages 14-15.) And will you install any hardscape? (See pages 16-17.) The documents: first, a simple schedule, showing when you want to pick up plants from us, when you're going to get your tools and supplies organized, and when you want to plant. Bear in mind that the best planting time is fall, not spring; fall planting gives the plants the longest possible time to establish themselves before the summer heat. Your second document: a budget. This doesn't have to be complicated; see the model on the inside back cover. There's a suggested tool and supply list on page 17. (We recommend borrowing as many tools as possible.) And please don't conceal your plans! Let us know ahead of time when you're going to need your plants - not on the day that you want to pick them up!

**10. Prep the site and plant.** Collect your plants, your gear, your team, and dig in! For details on planting, see pages 18-19. If your soil is dense clay and your site isn't too large, consider double-digging. (See page 9.)

**11. Play host.** While the garden is still a novelty, you have an important opportunity to strengthen its constituency.

People will want to learn what you and your team are up to, and now is the time to tell them! Invite colleagues out for a quick tour. Relevant classes might be enticed outdoors for a 15-minute discussion. And don't forget the grounds people, if your institution employs such people directly. If a contractor does the mowing, make sure that whoever deals with the contractor knows about your efforts. We have had plantings demolished by overly zealous mowing and weed-whacking. Signage doesn't always work.

**12. Add water and patience.** Water the new planting regularly. (See page 19 for watering tips.) It will take some time for your plants to establish themselves. In our experience, most native forbs (broadleaved herbaceous plants) produce relatively little top-growth during their first growing season. The really important growth is occurring underground. But even after a planting has settled in, it rarely behaves exactly as expected. Some of your plants may not survive. Some may grow more exuberantly than you anticipated. And there is one form of change that you can count on: lots of weeds! For all of these reasons, your initial planting is just a first step. You and your

team will need to learn how to maintain and improve your planting. (See pages 20-21.) And as you discover which species are doing well and which are not, you can supplement your initial planting. (See our "Inventory of

## Don't treat the project as a single planting event. Start small but plan for the long-term.

Common Natives" on pages 25-27.) Of course, we can help you choose additional species when the time comes.

Garden projects are not inherently that difficult. Soil, water, light, and plants: these are the primary ingredients of every such project. Many people achieve wonderful results just by drawing on their experience with these factors, and by learning from their own mistakes. But working on institutional property can complicate matters, even when the project has solid adminstrative support and no detractors. Don't be discouraged if your project runs into difficulties that you didn't anticipate. Take the long view. You're trying to create procedures that will keep the project healthy for many years. It's not just about a single growing season, or even just about the landscape. It's also about changing institutional culture.



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# WHAT SHOULD IT LOOK LIKE?

## A design can help you figure that out.

**S** o the school likes your project, you've picked a kit, and you know your site. But if you haven't done much gardening before, you might still feel kind of unprepared. How does your potted nursery stock become a garden that will look good, not

**Illustration:** A sample design using some of the species included in the Kit I list (pages 4-5). Each species is drawn with a different outline; the key identifies the outlines. The design was created by Elisa Meara, a landscape designer who specializes in the native plants of northern Virginia.

be too hard to manage, and invite kids to learn something about nature?

The answer to that question lies in the field of design and that field covers a lot of ground. Successful design can be an exercise in planting by blueprint, where all the garden hardscape is mapped out and the exact location of every plant is specified. Other designs, just as successful, consist of a piece of mud-spattered paper with notes and a casual drawing. And we do many plantings with no design at all: we just shift unplanted pots around until we're satisfied with the probable results.



## **Design Basics:**

Eight principles that will help get your project off to a strong start.

#### 1. Read the site first.

You used the general character of your site to choose your kit. Now is the time to note anything particular about it. Is there much of a slope? Does the light vary? Will you need to deflect foot traffic? See the form on page 28 if you want our advice.

#### 2. Next, hardscape.

If your garden will contain anything other than plants — stones, a path, a log — draw those in before you place the plants.

#### 3. Think grown-out.

Always design for grown-out plants. All plants start out small, so don't be fooled by seedling sizes! See the kit species lists for estimates on grown-out height and width. Bear in mind also that many species tend to spread — if they're happy, they will make more of themselves!

#### 4. Don't skimp on the grasses.

Even if you are interested mostly in flowering plants, you need native grasses in your garden. These grasses are not like turf. They grow tall and in bunches; they help break up compacted soil and create habitat for the other plants. Our plant lists are designed to give you this vital grass component.

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But if you haven't created a public garden before, designing may be a useful exercise. A design, even if it's a very simple one, can help you get all your collaborators on the same page. It can help people think through the implications of the planting. And for students, designing may be a good way to explore the entire project.

The design below, by Elisa Meara (see illustration caption at left), draws on the species list for the "Sunny, Well-Drained Meadow" Kit. Some features of her design may be useful for your project too. Like what? First, it's important to note that Elisa designed with an eye for the likely mature size of the vegetation. Then she included a path to allow visitors to experience the garden from within. The path also allows her greater liberty in the placement of tall species, since visitors can see around them by entering the garden. There are also more subtle, esthetic considerations: by varying the degree to which various species are clumped together or spread out, Elisa can achieve a kind of rhythm or even tension in what the visitor sees. Such variation also has the effect of making the garden look "natural" since, on many sites, nature seems to work the same way.

A final key feature of design involves understanding when to insist and when to let go. Gardens, like meadows and forests, are not static places. Some of your plants will flourish and spread, and some may die away. In subsequent years, you may decide to add other species — or reduce the extent of some that are doing a little too well. Working with these changes is when the gardening really begins.



#### 5. Big species go first.

Once you've got any hardscape in place, identify your biggest species and place those next. If you're working with the Wet Meadow kit, the shrubs should get priority. Make sure that your big species have adequate space — don't let them crowd a path or a hardscape feature that you want to keep in view.

#### 6. Watch the views!

Variations in plant height and density will create variations in view. A small space will seem bigger if your design requires visitors to walk around in order to see everything — but make sure that everything can be seen from somewhere.

#### 7. Go even, yet clumpy.

Your planting should cover the entire garden, but don't plant on a grid. And don't aim for a completely even distribution of each species. You'll achieve a more natural result if you plant some species in clumps of several plants apiece.

#### 8. Be patient.

During the garden's first year, the most important growth will occur underground. The second growing season is usually when things begin to get interesting.

Now for the real work: learn to tend your garden! See pages 20-21.

# ABOUT HARDSCAPE

ardscape is that part of the landscape that won't grow: concrete, stone, lumber, and, arguably, garden gnomes all constitute hardscape. Your plants will be largely indifferent to hardscape, but it can be important in shaping human interaction with the planting.

Your project may not need hardscape, but the possibilities are worth a little thought. Three features of schoolyard plantings often involve hardscape: edging, framing, and paths.

Edging creates a clear boundary, and that tends to reduce intrusion. Edging won't prevent people from walking into the planting, but it will force them to perform that act as a matter of intention. This can be especially important if you're trying to manage "desire paths" (informal trails). Edging can also establish a boundary for mowing and weed-whacking; such a boundary may be essential to the survival of the planting, especially when it is new.



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Another useful function of edging is to create esthetic definition. "Neatness" is a cardinal suburban virtue, and wild gardens can look — well, pretty wild. Exuberant growth without an obvious boundary may be perceived as "messy," and that can undercut support for the project. A clear boundary can reassure people that the landscape as a whole is being managed, and that the growth is not the result of neglect. The boundary signals intent: a visitor may not understand what he's looking at, but when he sees the edging, he's more likely to conclude that there's some sort of rationale at work.

Framing is, basically, just very tall edging. Framing can elevate a bed, modify a slope, or improve accessibility for people with disabilities. But framing is expensive and not very natural, so it is probably not warranted for most projects.

Paths, on the other hand, may be worthwhile features for all but the smallest projects, and paths often benefit from hardscape. Path hardscape may involve pebbles or gravel, stone, or various concrete products. Hardscape paths may reduce maintenance and can help keep visitors from straying into delicate areas.

#### A Few Hardscaping Pointers

Be sparing: if you don't need it, don't install it. And if your project abuts a natural area, don't use hardscape.

Some hardscape may require more than "garden variety" approval. If you're planning more than a simple path or edging, check first.

Install hardscape before planting, so that the installation work doesn't damage the plants.

Remove turf and lay weed mat first. Otherwise, grass and weeds will come up through your hardscape.

Paths for kids may benefit from stone slabs set amidst mulch or pebbles. Moving from stone to stone is fun and helps keep kids on the path.

Frames usually look best if they are stepped along a slope, as with the project shown here. (Read the caption below.) If you're edging on a steep slope, consider whether you want to follow the slope or step the edging. Either option can work, but the visual effects differ.

This photo-set shows the construction of a timber-framed raised bed in the backyard of Chris and Lisa Bright, the Sangha's co-founders. Chris built the garden. Upper left: only simple tools were needed. A shovel, mattock, hoe, and soil rake were used for working the soil. A long level kept the frame, well, level! Stakes and cord defined the edges. A sledge hammer was used to set the spikes that secure the timbers to each other. Spike holes were bored with an electric drill. Lower left: the frame is dug in to prevent frost heaving, and the timber is laid on a hard-packed surface. Work started at the lowest point and proceeded upslope — an essential procedure for keeping everything level. Narrower timbers

## **Basic Tools & Supplies**

Borrow as many items as you can.

A field measuring tape

#### Shovels

Trowels. Useful for putting in small plants.

Mattocks. These are great for breaking up clay. One end of the blade is a pick; the other is a heavy-duty hoe. Be careful! Always look behind yourself before you swing a mattock.

#### Hoes

Soil rakes. Don't use leaf rakes.

- A mallet or sledge hammer for setting stakes
- A level if you're stepping a frame or edging. The longer the better.
- A wheelbarrow
- A hose, nozzle, & buckets
- If you're working with landscape lumber:
  - A drill & outdoor extension cord for boring spike holes. You can use your mallet or sledge hammer to set the spikes.

#### Supplies

- Hardscape if you want it treated lumber, plastic lumber, concrete "stone," real stone, or something else. Don't forget weed mat! Stakes & string
- If you want a soil amendment, we recommend leaf compost only. Nitrogen-rich amendments are unnecessary & encourage weeds.
- If you want mulch, use pine fines (the finest grade of pine-bark mulch) or leaves. Don't use wood chips or bark chunks, & keep the mulch thin to allow some soil exposure.
- Gloves. You can buy disposable cloth gloves at some local Asian supermarkets.

A trash bag or two

A sign. You can make your own & laminate it.

Plant labels if you want them. You can buy all sorts of blank labels on-line or at local garden centers.

were used on the fence side of the frame. **Upper right:** as the frame progressed, cross-pieces were added so that the soil wouldn't slope. That's not essential for every bed but this one is designed for regular soil disturbance. **Middle right:** since the bed is partly for growing vegetables, the inside of the frame was covered with an impermeable liner to prevent roots from touching the treated lumber. The black strips are the upper edges of the liner. Then the soil was turned in sections, sods were placed on the bottom, and since this was to be a raised bed, more topsoil was added. **Bottom right:** the finished bed. It's about 5.5 by 48 feet. (Photos were taken in April and May 2011 by Chris Bright.)







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# PLANTING

You've done your initial site survey (page 3) and organizing (12-13). You've considered designing (14-15) and hardscaping (16). Miss Utility is happy. You've got your Schoolyard Garden Kit, and you're ready to go! Now what? Here's how to organize your first planting.

A note on timing: plant in the fall if you can. That will give your plants the most time to establish themselves before the summer heat.

Your first task on planting day: get your gear organized. Hook up your hose right away. Don't wait until you need water to discover that the tap isn't on and there's no one in the building who knows where the valve is. Group all your plants by species. The plants will probably look pathetically small in comparison to their new home. Don't be fooled! In a couple of years, you'll be shopping for more space. One final preliminary: designate a photographer.

Next, dig in. (Is the clay very dense? Double-digging might help. See page 9.) Either way, scalp the turf off, and pile it aside. It's important to remove the turf because its dense,

**Photos:** Below, in October 2008, environmental science students from Lake Braddock Secondary School, in Burke, Virginia, installed a stream buffer on an unused expanse of turf at Franklin Middle School in Chantilly. The planting consists of trees and a few shrubs. At right, Katherine Isaacson, the Sangha's Development and Outreach Coordinator, examines the planting in August 2017. (Both photos were taken by Chris Bright, from about the same position.) shallow roots may prevent your plants from seeding themselves into their new home. If necessary, use mattocks to break up the clay. Go as deep as is feasible. If you can break things up to 9 inches or so, that should give your plants a good start. Then chop up the turf pieces and work them back into the soil. Finally, rake out the top a little bit. Use soil rakes, not leaf rakes.

If you're installing hardscape, do that next. Rough positioning of paths and edging is fine, since some post-planting adjustment will be feasible. But if your hardscape is more elaborate, try to get it the way that you want it now; extensive repositioning in a planted garden will likely damage the plants.

Place the plants. Have your team set each plant — still in its container — right where you want to plant it. Caution people to step carefully! A careless step could damage a plant. Once everything is in place, walk the site a few times and make any adjustments. What should you look for? Some of the tips in "Design Basics" (pages 14-15) could be helpful.

Now for the planting. If you're working with inexperienced volunteers, don't assume any prior knowledge! We once had to redo parts of a large planting because some volunteers didn't realize that they were supposed to remove the plants from their plastic containers before planting. Don't let something like this happen to you! Use this six-point procedure:

**1.** Dig a hole that is at least as deep as the plant's container is tall. Make the hole somewhat wider than the pot diameter.

**2.** Turn the plant upside down, being careful not to damage the top-growth, and tap or massage the pot to dislodge the root-ball. Push the plant out; don't pull it. You may need to be



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pretty vigorous if a plant has outgrown its pot. If there are roots extending through the holes in the container, save them if you can but don't worry if you have to break a few off.

**3.** Check for bound roots along the surface of the root ball. Pull any large root ends clear of the root ball so that the root tips are oriented outwards, away from the stem, rather than around it. You don't have to pull every little root, but it's good to get the big ones out.

4. Put the plant in its hole. Situate the plant so that all the roots will be covered but all the stem will be uncovered. Don't bury the base of the stem, but don't leave any roots exposed either. If you plant either too high or too low, the plant is much less likely to survive. If you need to, remove the plant from the hole and adjust the hole depth. Try to match plant to soil so that it looks like it sprouted right there.

**5.** Knock soil back into the hole all the way around the plant and press in the soil firmly. Press hard enough to fill any big air pockets but don't pound the clay into a solid mass.

**6.** You might want to mark the plant with a label or just a stick, so that it won't be missed during the first few waterings.

If you want to amend the soil, we recommend leaf compost only. Nitrogen-rich amendments just encourage weeds. Sprinkle your compost around the plants and rake it into the soil a little. Don't put it right against the plants, and don't overdo it. The compost is only to help your plants get started. Mulch — sparingly. A little mulch can help keep loose soil in place, and reduce mud spatter on plants during initial waterings. (Spatter can promote infection.) But mulch, like turf, can prevent your plants from seeding themselves into their new home, so go easy. A little exposed soil is natural and nothing to worry about. Use "pine fines" (the finest grade of pine-bark mulch) or in the fall, just use leaves. Avoid bark

chunks and wood chips.

Water as soon as your planting is in. Water even if rain is expected and even if it's already sprinkling. Initial watering Careful with mattocks! Always look behind yourself before you swing one. Make sure that volunteers do this too — and that they stay clear of other people swinging mattocks.

is one of the best things that you can do to help your plants settle in. But don't blast the plants with a high-pressure hose nozzle. Instead, drench them while keeping soil disturbance to a minimum. Buckets may work better than direct watering with a hose. Don't worry if some plants look bedraggled afterwards — that's normal. You will probably lose some top-growth over the next week or so, but root establishment is the main thing. Top-growth may perk up or resprout. For the first two weeks after planting, don't let the garden dry out.

Congratulations! Clean up and take the rest of the day off. Maintaining your garden starts tomorrow. (See pages 20-21.)



# MAINTAINING YOUR GARDEN

Your garden is composed of locally native plants, but the garden as a whole is still artificial. And like all artifice, it requires maintenance. If you don't care for it, many of the plants that you put in will disappear and much of the space will likely be occupied by the creeping invasive crud that already covers so much of the Mid-Atlantic. And then the grounds people will mow it.

Care is especially important after a major planting. But even after the planting has stabilized, it will still require regular attention, and that need will never go away. Your garden agenda should include the following activities.

**Recording.** Keep a journal and photograph the garden regularly. Your journal could be a blog or just a notebook. Either way, your history of the project will become increasingly interesting as the garden grows and stabilizes. It may become an important learning tool in itself.

Watering. This is especially important after plantings, because the transplanted roots have not yet grown into the adjoining the soil. Don't allow the garden to dry out for about two weeks or so after the initial planting. But before you water,

# "Wild Gardening" is a year-round activity.

always check the soil first. Reach in and work a finger or two into the soil a little ways, in a few

different places, to gauge moisture content. If the soil feels dry, water. If it's pretty wet in most spots, wait a few days. And when you water, avoid blasting the plants with a high-pressure hose; try to flood the area around the plants gently, so that you won't disturb the soil. Buckets are good for this. Once your planting is established, assuming that the planting is properly matched to the site, you probably won't need to water often — maybe only when you add more plants. In general, don't water in the fallow season unless you just planted something and the soil is dry. (For the fallow season, see opposite.)

Weeding. Weeding is likely to be, by far, the most time-consuming maintenance activity, so efficiency in this department really pays off. Just a couple of pointers.

"Weeding workdays" in fall and spring could help students develop their plant ID skills. Weeders need to know what's what — if you can't ID it, don't pull it! (Several items in the "Key Resources" section, pages 22-24, can help.)

Some people prefer to cut back weed top-growth instead of pulling out the entire plant. The idea is to limit soil disturbance, which may promote sprouting of even more weed seeds. Repeated cutting will eventually kill most weeds. Should you pull or cut? Both techniques have strengths and weaknesses. Effectiveness varies. You may want to experiment a little.

You may not want to remove every plant that makes its way unbidden into your garden. Some may be native "volunteers." Most of these will probably be very weedy — horseweed (*Conyza canadensis*), for instance, or catchweed bedstraw (*Galium aparine*). But you never know what will show up and, depending on the surroundings, you might get some pleasant surprises — maybe a native goldenrod (*Solidago* species) or a native aster (*Symphyotrichum* species).

The garden doesn't have to be 100% weed-free. Depending on its size, and which weeds you're dealing with, that may not be a realistic objective. But you should aim to keep the weeds on the defensive. And as you work, you'll learn which species you really need to go after — for example, Japanese stiltgrass (*Microstegium vimineum*) — and which you can deal with in a more relaxed way. For example, those very aggressive natives are often at their worst in disturbed areas or "incomplete

communities." They may lose their grip as your planting takes hold, and as you add more species to the garden.

Making up the losses. It's common to have some transplants die, especially if the planting was done in the spring, rather than in the fall. We suggest that you note any losses but delay replacement until the other stock has established itself. That way, you can deal with all the initial losses at one go, and you may be able to identify patterns. For instance, were losses confined to just one species, or to a particular part of the garden? Even if you didn't lose anything, it's still a



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good idea to get used to your initial planting and the weeds before you introduce more stock.

**Observing the inhabitants.** Watch what's feeding on your plants — but without applying any pesticide! There's a good chance that the diners are native insects. If you do have a pest problem, manual control is best. You can always check with us — and don't forget to take pictures.

Making the most of the fallow season. Late fall to early spring is a dormant period for the garden — but not for the gardener! Here are a few winter notes.

If you're worried about erosion, you can toss a few more leaves onto the ground, but don't cover every patch of exposed soil, or you may prevent your plants from seeding themselves into the garden's open spaces.

It's best to leave dead top-growth alone over the winter. If you cut it, you'll deprive visitors of a chance to appreciate the garden in winter — and you may deprive native insects and birds of important habitat and forage. For example, some pollinating insects lay their eggs on plant stalks during the growing season; if you cut those stalks in the fall, you'll be working against one of the most important benefits that your garden can confer. Don't mow until early spring. Late March might be the best time. And if you are machinemowing, it's best to cut high (maybe 6 inches).

Eventually, some of your plants may do a little too well, and winter is the best time to play Garden Cop. You can prevent the toughest plants from encroaching on the timid species by digging up and dividing clumps of the aggressive ones. Move some clumps to other parts of the garden, or share them with friends or colleagues. And don't worry about a little disruption — it's OK to sacrifice a little top-growth to this operation!

Winter is also the best time to repair or reposition hardscape. You'll be less likely to damage your plants as you work, and it's easier to see what you're doing when the garden is not in leaf.

Towards the very end of winter or in early spring, you'll probably need to begin weeding again, if your garden has been colonized by some of our more aggressive cool-season invasives, such as common chickweed (*Stellaria media*).

More weeding! There will always be weeding. That's why it's weeding, not planting, that makes for good gardeners.

**Photos:** At left, students at Lorton Station Elementary, in Lorton, Virginia, installed plants from our Wild Plant Nursery in a set of tall raised beds in October 2012. Such beds can improve access for students with disabilities. Above, a native bumblebee feasted on the nectar of a spotted beebalm (*Monarda punctata*) at our nursery in August 2016. Our region is home to many native bee species. (The honey bee is alien.) Many native bees are in decline and would benefit from gardens offering a diverse menu of native nectar sources. (Both photos were taken by Lisa Bright.)



The Negative Side of Maintenance: 8 THINGS YOU SHOULDN'T DO

1. Don't fertilize. The natives don't need it, and you'll just encourage the invasives.

2. Don't pile on the mulch. You'll prevent your plants' seed from reaching the soil and sprouting.

3. Don't mow at the wrong time. You'll kill the creatures you should be helping. (See the article on this spread.)

4. Don't neglect the edging or other hardscape. Your garden may be perceived as an "eyesore." (See page 16.)

5. Don't forget to plan for summer, if yours is a school project. Someone should check on — and photograph — the plants a couple times a month.

6. Don't allow encroachment or abuse. It will only get worse. Use signs or low fencing to block mowing or straying off paths. Pick up litter right away. If you know the responsible parties, talk to them.

7. Don't try to do the whole project solo. You'll need other gardeners who know enough to step in when you can't be there.

8. Don't take the garden (or yourself) too seriously. A garden gnome is okay.

# KEY RESOURCES

This list focuses on resources that are basic, or especially good, or that newcomers to the field might not readily find elsewhere. The list is more technical than popular. It includes a sample of resources on the flora of this region, as well as a range of other materials that can help create a richer context for your work with wild plants. Links for organizations and online resources are not cited because links change so often. A web search will likely locate a current link. Annotations appear only where necessary to justify inclusion or explain relevance. If you can't find something, ask us.

#### Important Local Organizations

Arlington Regional Master Naturalists (ARMN).
Fairfax County Public Schools, Get2Green initiative. An environmental stewardship program for the County's public schools.
Fairfax Master Naturalists.
Maryland Native Plant Society.
Prince William Wildflower Society.
Virginia Native Plant Society, Potowmack Chapter.

#### Field Guides

Lauren Brown, *Grasses: An Identification Guide* (New York: Houghton Mifflin, 1979). Includes a selection of many common native and exotic grasses, as well as sedges, rushes, and a few forbs. Not exhaustive but easy to use.

Lauren Brown, *Wildflowers and Winter Weeds* (New York: Norton, 1976). A selection of northeastern herbs, both native and alien,

most of which also occur in the DC region. Unique in its focus on winter. Illustrated with the author's own spare, evocative drawings.

- Steven Clemants and Carol Gracie, *Wildflowers in the Field and Forest: A Field Guide to the Northeastern United States* (New York: Oxford UP, 2006). Coverage includes the DC region. Includes both native and alien species.
- Jeffrey Glassberg, Butterflies through Binoculars: A Field Guide to Butterflies in the Boston – New York – Washington Region (New York: Oxford UP, 1993).
- Bruce Kershner et al., *National Wildlife Federation Field Guide to Trees of North America* (New York: Sterling, 2008). Covers all trees native to the continental US and Canada, as well as some aliens.
- Lawrence Newcomb, *Newcomb's Wildflower Guide* (Boston: Little Brown, 1977 and rpt. many times thereafter). Illustrated with exquisite drawings, some in color. A classic. Probably the best wildflower field guide for our region.
- William A. Niering and Nancy C. Olmstead, National Audubon Society Field Guide to North American Wildflowers, Eastern Region (New York: Knopf, 1979 and rpt. many times thereafter). Just one title in an extensive series of useful field guides. Note especially the NAS Field Guide to North American Birds, Eastern Region, and the NAS Field Guide to North American Insects and Spiders.
- Roger Tory Peterson and Margaret McKenny, *A Field Guide to Wildflowers of Northeastern and North-Central North America* (Boston: Houghton Mifflin, 1968). Includes Virginia and Maryland. Just one title in an extensive series of useful field guides. Note especially the *Field Guide to Eastern Butterflies* and the *Field Guide to Birds of Eastern and Central North America*.



#### Guides to Invasive Alien Plants

- Jil M. Swearingen et al., *Plant Invaders of Mid-Atlantic Natural Areas*, 4th ed. (Washington, DC: National Park Service and US Fish and Wildlife Service, 2010). As important to the study of our local flora as are the conventional field guides. Available online.
- Richard H. Uva, Joseph C. Neal, and Joseph M. DiTomaso, *Weeds of the Northeast* (Ithaca, NY: Cornell UP / Comstock Publishing, 1997). Probably the best guide to the alien herbaceous (nonwoody) flora of the Mid-Atlantic and Northeastern states. Weedy native herbaceous species are also covered, as are some woody species, both native and exotic.

#### Comprehensive Floras & Ecological Resources

- Melvin L. Brown and Russel G. Brown, *Herbaceous Plants of Maryland* (Baltimore: Port City Press, 1984).
- Russel G. Brown and Melvin L. Brown, *Woody Plants of Maryland* (Baltimore: Port City Press, 1972).
- Virginia Department of Conservation and Recreation, Natural Heritage Program, "The Natural Communities of Virginia: Classification of Ecological Community Groups," Third Approximation (April 2017). Essential for understanding the ecology of Virginia's natural areas. Links to detailed classifications in Nature-Serve.

Virginia Botanical Associates, "Digital Atlas of the Virginia Flora." Alan S. Weakley, J. Christopher Ludwig, and John F. Townsend, *Flora of Virginia* (Fort Worth: BRIT Press, 2012.)

#### Close-Up Views of the DC Area

- Cristol Fleming, Marion Blois Lobstein, and Barbara Tufty, *Finding Wildflowers in the Washington-Baltimore Area* (Baltimore: Johns Hopkins University Press, 1995). Includes species lists for many local natural areas.
- Kamal M. Ibrahim and Paul M. Peterson, *Grasses of Washington*, D.C., Smithsonian Contributions to Botany 99 (Washington: Smithsoonian Institution Scholarly Press, 2014).
- Roderick H. Simmons, *Native Vascular Flora of the City of Alexandria, Virginia* (Alexandria Department of Recreation, Parks, and Cultural Activities, 2015). You don't have to live in Alexandria to profit from this detailed survey of the City's plant communities.
- Howard Youth, *Field Guide to the Natural World of Washington*, D.C. (Baltimore: Johns Hopkins UP, 2014).

#### Science for Gardeners

- Steven B. Carroll and Steven D. Salt, *Ecology for Gardeners* (Portland, OR: Timber Press, 2004).
- Thomas J. Elpel, *Botany in a Day: the Patterns Method of Plant Identification*, 5th ed. (Pony, MT: HOPS Press, 2004).



Eric Grissell, *Insects and Gardens: In Pursuit of a Garden Ecology* (Portland, OR: Timber Press, 2001.

- Donald J. Leopold, *Native Plants of the Northeast: A Guide for Gardening and Conservation* (Portland, OR: Timber Press, 2005). Despite the title, coverage includes the DC region. Discusses native plant communities and includes many gorgeous photos. The author is a forest ecologist and an expert gardener.
- Roderick H. Simmons and Greg Zell, "Keeping It Natural: A Local Guide to the Use of Native Plants for Natural Land Restorations and Post-disturbance Project Plantings within Natural Woodland Sites, Riparian Buffers, and Forest Edges in Arlington County and the City of Alexandria in Virginia" (Alexandria, VA: Department of Recreation, Parks, and Cultural Activities, 2010).
- Douglas Tallamy, *Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens*, 2<sup>nd</sup> edition (Portland: OR, Timber Press, 2009).

#### Other Perspectives — Animal, Vegetable, and Cultural

- E. Lucy Braun, *Deciduous Forests of Eastern North America* (1950; rpt. Caldwell, NJ: Blackburn Press). A thorough description of the eastern deciduous forests as they existed during the first half of the 20<sup>th</sup> century, by one of the best botanists of that era. An indispensable guide to what once was.
- William Cullina, *Wildflowers: A Guide to Growing and Propagating Native Flowers of North America* (Boston: Houghton Mifflin and the New England Wild Flower Society, 2000). There are two companion volumes: *Native Trees, Shrubs, and Vines: A Guide to*

**Photos:** At left, students at the Howard Gardner School in Alexandria, Virginia, used our stock to plant a bio-retention pond on school grounds in March 2011. (Photo was taken by Lisa Bright.) Above, an essential component of any meadow: an invertebrate predator! You should be able to find spiders and other small predators in your garden as well. (Photo was taken by Matt Bright at Deep Cut, Manassas National Battlefield Park, in August 2016.) Using, Growing, and Propagating North American Woody Plants (2002), and Native Ferns, Moss and Grasses (2008). All three should be useful and inspiring to anyone who would like to try his hand at propagation. One caveat: Cullina is concerned primarily with New England, so his timetables may not always match those of the mid-Atlantic.

Bonnie S. Driggers, ed., *American Botanical Paintings: Native Plants of the Mid Atlantic* (Hilton Head, SC: Lydia Inglett, 2014). Botanical artists explore the esthetics of our region's native plants.

- Paul R. Ehrlich, David S. Dobkin, and Darryl Wheye, *The Birder's Handbook: A Field Guide to the Natural History of North American Birds* (NY: Simon and Schuster, 1980. The book to reach for after you've figured out which species you saw.
- Michael A. Godfrey, *Field Guide to the Piedmont: The Natural Habitats of America's Most Lived-in Region, from New York City to Montgomery, Alabama* (Chapel Hill: University of North Carolina Press, 1980, rpt. 1997).
- Invasive.org: Center for Invasive Species and Ecosystem Health. A collaborative project involving the University of Georgia, USDA APHIS, and the US Forest Service.
- Bernard S. Martof et al., *Amphibians and Reptiles of the Carolinas and Virginia* (Chapel Hill: UNC Press, 1980). More details on these animals than you'll find in a field guide.
- Howard Miller and Samuel Lamb, *Oaks of North America* (Happy Camp, CA (no kidding!): Naturegraph Publishers, 1985). The oak enthusiast's bible.

- Arnold W. Norden, Donald C. Forester, and George H. Fenwick, eds., *Threatened and Endangered Plants and Animals of Maryland* (Annapolis, MD: Maryland Natural Heritage Program, 1984).
- Donald Culross Peattie, *A Natural History of Trees of Eastern and Central North America*, 2<sup>nd</sup> ed. (New York: Bonanza / Houghton Mifflin, 1966; rpt. 1991), and the companion volume, also by Peattie, *A Natural History of Western Trees* (first ed. Boston: Houghton Mifflin, 1953; rpt. 1991). A gifted naturalist and writer, Peattie used the field-guide genre to create a cultural history of North American forests.
- Leslie Jones Sauer and Andropogon Associates, *The Once and Future Forest: A Guide to Forest Restoration Strategies* (Washington, DC: Island Press, 1998). Sauer's principles and procedures apply to many types of natural plantings, both large and small.
- David Allen Sibley, *The Sibley Guide to Bird Life and Behavior* (NY: Random House and the National Audubon Society, 2001). As close as a single book has come to redefining ornithology.
- Karen Terwilliger, John R. Tate, and Susan L. Woodward, *A Guide to Endangered and Threatened Species in Virginia* (Blacksburg, VA: McDonald and Woodward, 1995).



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# WILD PLANT NURSERY INVENTORY OF COMMON NATIVES

This list is meant to introduce you to our nursery inventory. Our nursery now includes over 300 species, all of them native to the DC area, and all of them grown from local, wild seed (or spores, in the case of ferns). This list is a subset of the inventory as a whole. It focuses on species that are:

Common (and therefore very important ecologically),

Suited to a wide range of growing conditions,

And for the most part, tough — not difficult to grow. Excluded here are species that are rare in our region, or that are restricted in their natural distribution (for instance, because they occur only in unusual habitats), or that are hard to grow. Also excluded are some species that are so common and aggressive that they usually just show up on their own. For example, to grow tulip-poplar (*Liriodendron tulipifera*), all you really have to do is stop mowing. For our entire current inventory, see the nursery pages of our website, at earthsangha.org. (Please note that not every species in our system is available at the nursery all of the time.)

The nursery produces stock for ecological restoration projects on public lands, but it is also open to the public for private purchases. There are at least two Nursery Open-House Plant Sales every year, one in the spring and one in the fall. These sales raise money for local restoration projects. You can also visit the nursery at other times, by appointment. Contact us at info@earthsangha.org or at 703-764-4830. The nursery is in Franconia Park, in Springfield, Virginia. Driving directions are available on our website.

#### Forbs

Agrimonia parviflora: Manyflowered Agrimony Allium cernuum: Nodding Onion Anemone virginiana: Thimbleweed Angelica venenosa: Hairy Angelica Asclepias incarnata: Swamp Milkweed A. syriaca: Common Milkweed A. tuberosa: Butterfly Weed A. viridiflora: Green Milkweed Aquilegia canadensis: Wild Columbine Baptisia australis: Blue False Indigo B. tinctoria: Yellow Baptisia Chamaecrista fasciculata: Partridge Pea Chelone glabra: White Turtlehead Chrysopsis mariana: Maryland Golden Aster Cirsium discolor: Field Thistle C. pumilum: Pasture Thistle Clinopodium vulgare: Wild Basil Conoclinium coelestinum: Blue Mistflower Coreopsis tripteris: Tall Coreopsis

**Photo:** A view of the meadow garden, including hardscape, at the home of Lisa and Chris Bright, in September 2016. The green mass in the background is an arborvitae hedge that screens the planting from the street. Part of this garden is shown in close-up on the inside front cover. It's easy to understand the appeal of such places during the growing season, but see page 27. (Photo by Chris Bright.)

C. verticillata: Thread-leaf coreopsis Crotalaria sagittalis: Arrowhead Rattlebox Desmodium ciliare: Hairy Small-leaf Ticktrefoil D. marilandicum: Smooth Small-leaved Ticktrefoil D. paniculatum: Panicled Ticktrefoil Dioscorea villosa: Wild Yam Doellingeria umbellata: Flat-topped White Aster Erigeron pulchellus: Robin's Plantain Eupatorium hyssopifolium: Hyssop-leaved Boneset E. perfoliatum: Common Boneset E. rotundifolium: Roundleaf Thoroughwort Euphorbia corollata: Flowering Spurge Eurybia divaricata: White Wood Aster Euthamia graminifolia: Narrow-leaved Goldenrod Eutrochium fistulosum: Joe-Pye Weed Gentiana clausa: Bottle Gentian Geranium maculatum: Wild Geranium Helenium autumnale: Common Sneezeweed H. flexuosum: Purple-headed Sneezeweed Helianthus divaricatus: Woodland Sunflower H. giganteus: Giant Sunflower H. strumosus: Paleleaf Woodland Sunflower Heuchera americana: American Alumroot Hibiscus moscheutos: Swamp Rose Mallow Lespedeza capitata: Round-headed Bush Clover L. hirta: Hairy Bush Clover L. procumbens: Trailing Bush Clover Liatris pilosa: Grass-leaved Blazing Star L. spicata: Dense Blazing Star L. squarrosa: Scaly Blazing Star Lobelia cardinalis: Cardinal Flower L. siphilitica: Great Blue Lobelia Ludwigia alternifolia: Seedbox Micranthes virginiensis: Early Saxifrage Mimulus ringens: Allegheny Monkeyflower Monarda didyma: Scarlet Beebalm M. fistulosa: Wild Bergamot M. punctata: Spotted Beebalm Oenothera fruticosa: Sundrops Onoclea sensibilis: Sensitive Fern Opuntia humifusa: Eastern Prickly Pear Packera anonyma: Small's Ragwort Penstemon digitalis: Foxglove Beardtongue Phlox paniculata: Fall Phlox Polystichum acrostichoides: Christmas Fern Potentilla canadensis: Dwarf Cinquefoil Pycnanthemum incanum: Hoary Mountain-mint P. tenuifolium: Narrow-leaved Mountain-mint Rudbeckia fulgida: Orange Coneflower R. hirta: Black-eyed Susan R. laciniata: Green Coneflower Ruelia caroliniensis: Wild Petunia Sagittaria latifolia: Common Arrowhead Salvia lyrata: Lyreleaf Sage

Scutellaria integrifolia: Hyssop skullcap Sedum ternatum: Wild Stonecrop Senna hebecarpa: Northern Wild Senna S. marilandica: Southern Wild Senna Sericocarpus asteroides: Toothed Whitetop Aster S. linifolius: Narrowleaf Whitetop Aster Silphium asteriscus: Whorled Rosinweed Sisyrinchium angustifolium: Blue-eyed Grass Solidago bicolor: Silverrod S. caesia: Blue-stemmed Goldenrod S. erecta: Erect Goldenrod S. juncea: Early Goldenrod S. nemoralis: Gray Goldenrod S. odora: Fragrant Goldenrod S. rugosa: Rough-stemmed Goldenrod S. ulmifolia: Elm-Leaved Goldenrod Stachys hispida: Bristly Hedge Nettle Symphyotrichum lanceolatum: Panicled Aster S. lateriflorum: Calico Aster S. novae-angliae: New England Aster S. patens: Late Purple Aster S. prenanthoides: Crooked-stem Aster S. undulatum: Wavy-leaf Aster Teucrium canadense: Canadian Germander Trichostema dichotomum: Forked Blue Curls Verbena hastata: Blue Swamp Verbena Vernonia glauca: Broad-leaf Ironweed V. noveboracensis: New York Ironweed Veronicastrum virginicum: Culver's Root Zizia aurea: Golden Alexanders

#### Grasses & Grass-like Plants

Andropogon gyrans: Elliott's bluestem A. virginicus: Broomsedge bluestem Brachyelytrum erectum: Bearded Shorthusk Bromus pubescens: Common Eastern Brome Carex blanda: Wood Sedge C. crinita: Fringed Sedge C. folliculata: Northern Long Sedge C. glaucodea: Blue Sedge C. intumescens: Greater Bladder Sedge C. lupulina: Hop Sedge C. lurida: Sallow Sedge C. squarrosa: Squarrose Sedge C. swanii: Swan's sedge C. typhina: Cattail Sedge Chasmanthium laxum: Slender Oatgrass Cinna arundinacea: Common Wood Reedgrass Coleataenia anceps: Beaked Panic Grass C. rigidula: Redtop Panic Grass Danthonia spicata: Poverty oat grass Dichanthelium clandestinum: Deertongue Grass Elymus glabriflorus: Southeastern Wildrye E. hystrix: Bottlebrush Grass E. riparius: Riverbank Wildrye

E. virginicus: Virginia Wild Rye Eragrostis spectabilis: Purple Lovegrass Erianthus alopecuroides: Silver Plumegrass E. giganteus: Giant Sugarcane Plume Grass Juncus biflorus: Large Grass-leaved Rush J. canadensis: Canadian Rush J. effusus: Soft Rush J. tenuis: Path Rush Leersia virginica: White Cutgrass Paspalum floridanum: Crowngrass P. laeve: Field Paspalum Rhynchospora capitellata: Brownish Beaksedge Schizachyrium scoparium: Little Bluestem Schoenoplectus tabermontani: Soft Bulrush Scirpus georgianus: Georgia Bulrush Sorghastrum nutans: Indian Grass Tridens flavus: Purpletop Grass Tripsacum dactyloides: Eastern Gamagrass

#### Shrubs & Small Trees

Alnus serrulata: Common Alder Amelanchier canadensis: Serviceberry Aralia spinosa: Devil's Walking Stick Aronia arbutifolia: Red Chokeberry A. melanocarpa: Black Chokeberry Asimina triloba: Pawpaw Celtis tenuifolia: Dwarf Hackberry Cephalanthus occidentalis: Buttonbush Cercis canadensis: Eastern Redbud Cornus amomum: Silky Dogwood C. florida: Eastern Flowering Dogwood Corylus americana: American Hazelnut Euonymus americanus: Strawberry Bush Hamamelis virginiana: Witch Hazel Hydrangea arborescens: Wild Hydrangea Ilex opaca: American Holly I. verticillata: Winterberry Holly Itea virginica: Virginia Sweetspire Lindera benzoin: Spicebush Magnolia virginiana: Sweetbay Magnolia Physocarpus opulifolius: Ninebark Rhus copallinum: Winged Sumac R. glabra: Smooth Sumac R. typhina: Staghorn Sumac Rosa carolina: Carolina Rose R. palustris: Swamp Rose Sambucus canadensis: Common Elderberry

**Photo:** A view in January 2017 of the Brights' meadow garden. (See page 24.) Leaving the dead top-growth intact during winter boosts the garden's ecological value. (See page 21.) There is also an esthetic opportunity here: intricate winter stalks, with their dead leaves and spent seed pods, invite close-up examination. Before you can really appreciate a wild garden, you must be able to welcome its winter aspect. (Photo by Chris Bright.)

Staphylea trifolia: American Bladdernut Viburnum acerifolium: Maple-leaf Viburnum V. dentatum: Arrowwood Viburnum V. nudum: Swamphaw Viburnum V. prunifolium: Blackhaw Viburnum

#### Large Trees

Acer rubrum: Red Maple Betula nigra: River Birch Carpinus caroliniana: Ironwood Carya cordiformis: Bitternut Hickory C. glabra: Pignut Hickory C. ovalis: Sweet Pignut C. tomentosa: Mockernut Hickory Celtis occidentalis: Common Hackberry Diospyros virginiana: Persimmon Juniperus virginiana: Eastern Redcedar Nyssa sylvatica: Black Gum, Tupelo Ostrya virginiana: Eastern Hophornbeam Pinus virginiana: Virginia Pine Platanus occidentalis: Sycamore Prunus serotina: Black Cherry Quercus alba: White Oak Q. bicolor: Swamp White Oak Q. x columnaris: Columnar Oak

Q. coccinea: Scarlet Oak Q. falcata: Southern Red Oak Q. michauxii: Swamp Chestnut Oak Q. montana: Chestnut Oak Q. palustris: Pin Oak Q. phellos: Willow Oak Q. rubra: Northern Red Oak Q. velutina: Black Oak Salix nigra: Black Willow Sassafras albidum: Sassafras Ulmus americana: American Elm

#### Vines, Both Woody & Herbaceous

Lonicera sempervirens: Trumpet Honeysuckle Menispermum canadense: Common Moonseed Parthenocissus quinquefolia: Virginia Creeper Passiflora lutea: Yellow Passionflower Vitis cinerea: Possum Grape V. labrusca: Fox Grape



## Contact Organizer: here's how to order a kit or ask us a question.

To order, just email us at info@earthsangha.org, and tell us which kit you want. (It's better to email than to call.) Whether you're ordering or asking a question, we'll probably need some basic information about your project. Please tell us, or be prepared to tell us:

I. Your contact information, the school's name and location, and your affiliation with it.

2. A brief description of the site, including rough dimensions and proximity to buildings or pavement. How much light does the site get? Does it get morning or afternoon sun? What's growing on the site now? Are there trees in it or near it? Is the site currently in use? Is it in a courtyard? There's space for notes below.

3. Are there other plans for the site or for areas nearby — for example, for an outdoor classroom or recreational space?

4. How far along are you in your plans for the project? Has the school administration approved? Do you have funding?

5. Who is going to do the planting and maintain the garden? Are student clubs involved, for example, or a PTA?

6. Which kit are you interested in and why do you consider it the best choice for your site?

7. Do you have questions for us?

#### Contact Us

Earth Sangha, 10123 Commonwealth Blvd., Fairfax, VA 22032-2707, (703) 764-4830, info@earthsangha.org. Please note: this is our office address, not the nursery address. See our website, at earthsangha.org, for directions to the nursery.

#### Share Your Photos & Stories

We want to hear about your garden! You can help us improve our program by telling us about what has worked — and what has not. Email us at info@earthsangha.org, and don't forget to attach a photo or two.

#### Work with Us

We are always looking for volunteers to help us at our nursery and field sites. See the Volunteer page on our website, at earthsangha.org. (Top menu: Take Action: Volunteer.) Credits

We are grateful to the Botanical Artists for Education and the Environment for a generous grant, made in 2016, to support this guide and the Schoolyard Garden Kit program as a whole. We thank Elisa Meara for the beautiful design shown on pages 14-15. And we thank our many dedicated volunteers and expert colleagues for making our schoolyard program possible in the first place. This guide was written and designed by the staff of the Earth Sangha.

This guide © 2018 by the Earth Sangha. All rights reserved.

**Photo:** Two patrons of our Wild Plant Nursery's Fall Open House. The nursery's Open House events help raise money for our restoration projects in local parks. See our website for more information. (Photo was taken in October 2016 by Chris Bright.)

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# What will it cost? You can use this table to estimate your expenses.

ITEM	COST	NOTES
Edging materials		See page 16. You can use stone, a concrete product, metal or plastic edging, landscape timber — or nothing at all.
Other hardscape		For instance, pebbles or flagstone for paths, or maybe a boulder. If you use it, hardscape may become your most expensive item.
Plants		See pages 4-11 for kit descriptions and prices.
Tools		See page 17. It's best to borrow these if you can.
Garden hose, nozzle, & buckets		If the school does not already have these.
A soil amendment. We recom- mend leaf compost only.		See page 19. Amendments are optional. If you do amend, go light. Heavy amendment tends to increase weed problems.
Mulch. We recommend pine fines.		See page 19 also. Go light on this too!
Plant labels		Students can make these from scratch, or you can buy various kinds of blank labels at garden stores or on-line.
Signs		You can print out your own signage and laminate it.
Other		Disposable cloth gloves, stakes, string, trashbags, and maybe a box of donuts.
TOTAL		

# EARTH SANGHA

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