

# **A Guide to Native Plant Design**

by Rachel Fox

This guide is designed to be a catalyst project for schools interested in incorporating native plants into their school environments. The final product of this project will be purposefully designed native plants in raised beds or container gardens. Ideally these beds will be mostly landscape oriented. However the possibilities are endless, and the design of the garden is ultimately in your hands.

Information about the demonstration beds on site at Litzsinger Road Ecology Center can be found on page 4. Sample templates have been included on page 5 to help you brainstorm. Plant lists begin on page 6.

## **Creating a Native Plant Garden at your School**

### **1. Find a location**

- Take your class on a tour around the school grounds.
- Have them discuss where they would like to see more green spaces.
- Talk with your schools maintenance and administrative teams and see what areas are feasible for your class to adopt.

### **2. Observe your site**

- Have your class write down observations about the site (sun, wind, pedestrian traffic, soil).
- Measure the site. This can be an opportunity to engage your class by having them measure, count, or calculate the area.

### **3. Begin selecting plants**

- The choice of plants depends on the amount of sun you have at your site. Choose plants that meet your site's conditions. (Note: plants in our plant list have been divided based on their sun requirements.)
- Selecting plants can be a class activity. Younger children might benefit from picking out plants based on colors. Older students might profit by researching one specific plant and presenting why they think their plant should be in the garden.
- Choose plants that have a variety of bloom times or seasons of interest. If your school doesn't hold classes in the summer, don't choose too many natives that have summer bloom times.

### **4. Build**

**If you have a location where there is usable soil, build a raised bed:**

- First, physically define your area. You can enclose your area using bricks, stones, or wood (see section on the demonstration beds at LREC for ideas). This enclosure helps protect your

garden from weeds and other plants. A more formal enclosure also helps publicly declare that your area is a garden and should not be disturbed.

- De-weed your space. This can be done by hand, pesticide, or by using a weed barrier. Having your class weed by hand is a great way to help them feel ownership of the garden. However depending on your needs you might find pesticide or a weed barrier more suitable.

**If your location does not have usable soil or if your space has impervious material (asphalt, concrete), build a container garden:**

- A container for your plants can be built or bought. One of the most important factors in container choice is the depth. The minimum depth for a native container gardens is three feet. To the best of our knowledge, plants with very deep taproots or extensive root systems have been excluded from the plant list.

## **5. Plant**

- Fill your garden with soil.
- Plant (contact with LREC to check sowing/planting times).
- Enjoy.

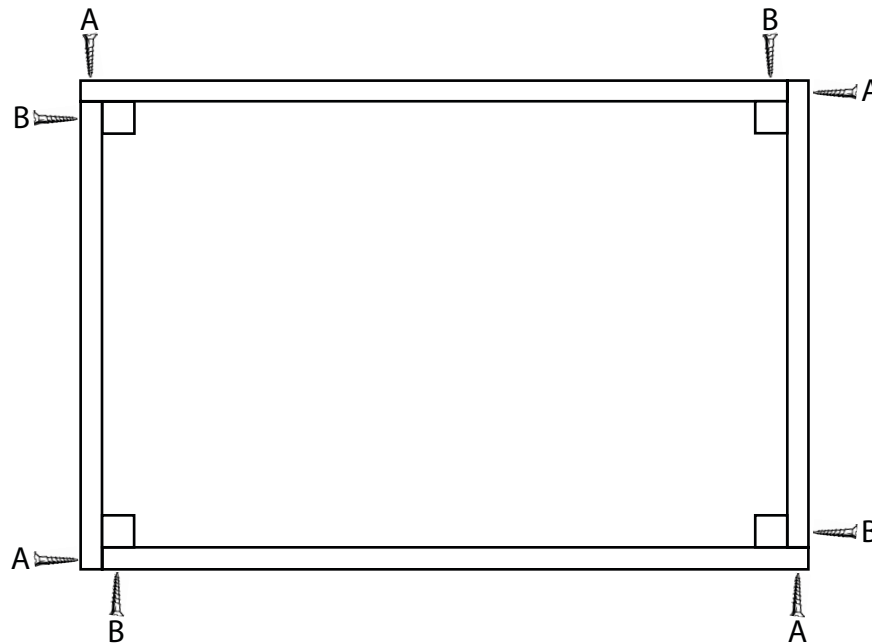
## The Demonstration Beds at Litzsinger Road Ecology Center

Materials:

- Salvaged wood planks from destroyed boardwalk ( 6'  $\times$  5"  $\times$  1")
- 2.5" galvanized screws
- 2"  $\times$  2" posts
- Carpenter's square

Our bed was 4'  $\times$  6'  $\times$  3' deep. We calculated that we would need about six boards high to reach an adequate depth for our container. We kept twelve boards at 6' long and cut another twelve boards to 4' long. We cut the posts to 3' tall.

The figure below best illustrates how we constructed the first level. We pre-drilled the wood so that our screws would go in easily and accurately. The screws at points A held the boards together to form the frame. The screws at points B held the frame to the posts. **At each point we used two screws.** (Figure not to scale.)



To build the remaining five levels we followed the same general process. We continued to build more levels on top of our first; the only difference being that with levels two through six we did not use the B screws. In other words, levels two through six were not connected to the posts. Keeping the upper levels independent of the posts helped us transport and assemble the structure with ease.

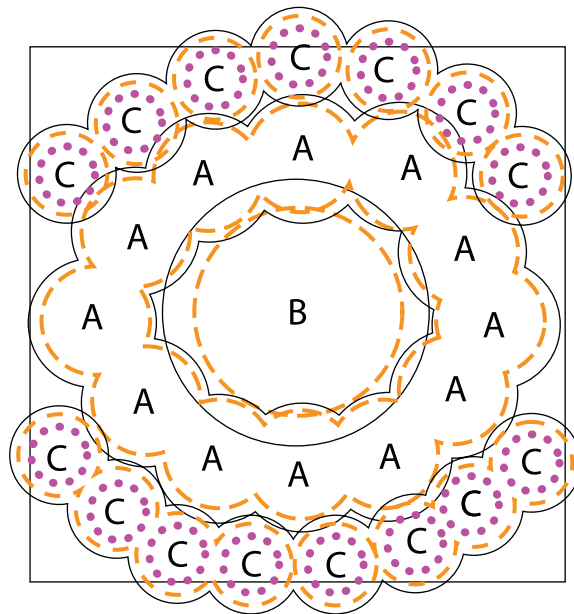
We labeled one corner on each level with the level number. We only labeled in one specific corner so that the boxes would be correctly aligned when we stacked them on top of the first level.

We leveled the ground in the bed area and assembled our container by slipping the remaining frame levels over the posts.

## Garden Templates

Here are some ideas to help get you started. The space shown is a 4' × 4' area. When building a container or raised bed consider making one of your dimensions only four feet wide. The average person's reach is about two feet. If your area is accessible from both sides this will account for the four foot width. Keeping the areas of the garden within reach makes it easier to maintain and water.

The dotted and dashed colored lines represent peak time(s) of interest for the plants listed.



### THE AROMATIC GARDEN

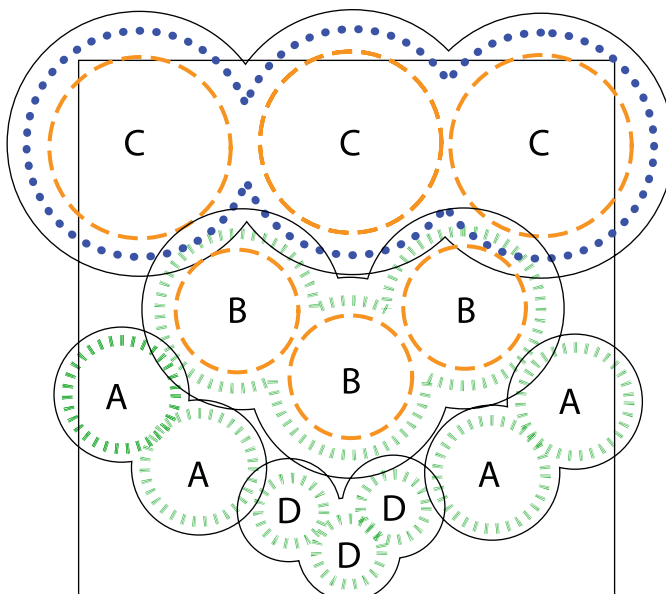
--- Summer

..... Fall

A. Ohio horsemint

B. Slender mountain mint

C. Calamint



### THE TEXTURE GARDEN

--- Summer

..... Winter

..... Spring

A. Royal catchfly

B. Evening primrose

C. Northern sea oats

D. Three-leaved stonecrop

## Native Plant List

### Full Sun – Part Shade, page 1 of 5

Scientific Name	Common Name	Height (feet)	Width (feet)	Sun	Water	Other Features
SEDGES						
<i>Carex annectens</i>	sedge	1–3	1–2	Full sun – part shade	Medium – wet	Flowers bloom in late spring, greenish-yellow
<i>Carex bicknelli</i>	prairie sedge	1.5–3	1.5–2	Full sun – part shade	Medium	Flowers spring to early summer, yellowish-green, tolerant of dry soils, during hot dry summers foliage may die back
<i>Carex grayi</i>	gray sedge	2–3	1.5–2	Full sun – part shade	Medium – wet	Flowers summer through fall, spiked club-like, evergreen
<i>Carex praeagrailis</i>	clustered field sedge	2–3	2–3	Full sun – part shade	Medium – wet	Identification of species can be very difficult, insignificant flowers in May
<i>Carex stricta</i>	tussock sedge	1–3	1–2	Full sun – part shade	Medium – wet	Showy reddish-brown flowers in early summer, evergreen
GRASSES						
<i>Bouteloua curtipendula</i>	sideoats grass	1.5–2.5	1.5–2	Full sun	Dry – medium	Typically bluish-gray, turns golden0brown or reddish in fall, purplish flowers in mid summer
<i>Bouteloua gracilis</i>	blue grama	0.75–2	1.5–2	Full sun	Dry – medium	Flowers reddish-purple in summer, cut to ground in late winter
<i>Chasmanthium latifolium</i>	northern sea oats	2–5	1–2.5	Full sun – part shade	Medium – wet	Nice texture, winter interest, seed heads start green but turn bronze by late summer, flowers late summer
<i>Elymus canadensis</i>	canada wild rye	2–5	2–3	Full sun	Dry – medium	Arching wheat/rye-like spikes that stay in bloom from summer until winter, flowers in summer
<i>Elymus hystrix</i>	bottlebrush grass	2.5–3	1–1.5	Full sun – part shade	Dry – medium	Flowers greenish-brown in early fall
<i>Muhlenbergia capillaries</i>	pink muhlygrass	2–3	2–3	Full sun – part shade	Dry – medium	Flowers pinkish in summer and remain tan in winter, best in full sun
<i>Schizachyrium scoparium</i>	little bluestem	2–4	1.5–2	Full sun	Dry – medium	Insignificant flowers late summer to winter, green leaves with bronze-orange fall color
<i>Sporobolus heterolepis</i>	praire dropseed	2–3	2–3	Full sun	Dry – medium	Winter interest, pink and brown tinted flowers in late summer to fall, green leaves turn golden in fall and light bronze for winter

## Native Plant List

### Full Sun – Part Shade, page 2 of 5

Scientific Name	Common Name	Height (feet)	Width (feet)	Sun	Water	Other Features
HERBACEOUS PERENNIALS						
<i>Anemone canadensis</i>	windflower	1–2	1–2.5	Full sun – part shade	Medium	Small white 5-petaled flower, flowers in spring, flowers held well above foliage, seed heads remain into winter
<i>Aquilegia canadensis</i>	columbine	2–3	1–1.5	Full sun – part shade	Medium	Light pink or red with yellow, flowers in spring
<i>Blephilia ciliata</i> , <i>B. hirsute</i>	Ohio horsemint, hairy woodmint	1–2.5	0.75–1.5	Full sun – part shade	Dry – medium	Bluish-purple flowers in multi-tiered whorled clusters, flowers in summer, foliage
<i>Calamintha arkansana</i>	calamint	0.5–1	0.5–1	Full sun	Medium	White or rose-purple flowers summer to fall, easily grown from seed, aromatic plant
<i>Chelone obliqua</i>	turtlehead	2–3	1–2	Full sun – part shade	Medium – wet	Rosy purple flower in summer, best in moist to wet soil, dark green leaves
<i>Clematis fremontii</i>	Fremon's leather flower	1–1.5	0.75–1	Full sun – part shade	Medium	Purple to white flowers in spring
<i>Conoclinium coelestinum</i> or <i>Eupatorium coelestinum</i>	blue mistflower	1.5–3	1.5–3	Full sun – part shade	Medium	Blue flower in late summer to fall, can be aggressive
<i>Coreopsis lanceolata</i>	lanceleaf coreopsis	1–2	1–1.5	Full sun	Dry – medium	Yellow flowers in summer, very tolerant of drought, heat, humidity
<i>Coreopsis palmate</i>	tickseed	1.5–2.5	1–1.5	Full sun	Dry – medium	Yellow flowers in summer, tolerant of drought, heat and humidity
<i>Cunila origanoides</i>	common dittany	0.75–1.5	0.75–1.5	Full sun – part shade	Dry – medium	Lavender flowers in summer, easily grown from seed
<i>Desmanthus illinoensis</i>	prairie bundleflower	2–3	2–3	Full sun	Dry – medium	White flower in early summer, drought tolerant, easily grown from seed
<i>Echinacea pallida</i>	pale purple coneflower	2–3	1–1.5	Full sun – part shade	Dry – medium	Pale purple flowers in summer, tolerant of drought, heat, humidity and poor soil
<i>Echinacea purpurea</i>	purple coneflower	2–5	1.5–2	Full sun – part shade	Dry – medium	Purple flowers in summer, tolerant of drought, heat and humidity
<i>Eurybia furcata</i>	forked aster	1–3	0.75–1.5	Full sun – part shade	Medium	White rays with yellow center, flowers in summer to early fall

## Native Plant List

### Full Sun – Part Shade, page 3 of 5

Scientific Name	Common Name	Height (feet)	Width (feet)	Sun	Water	Other Features
<i>Fragaria vesca</i>	wild strawberry	0.25–0.75	0.75–1	Full sun – part shade	Medium	White with yellow center flowers in summer
<i>Gaillardia aestivalis</i>	lance leaf blanket flower	1–1.5	0.75–1	Full sun	Dry – medium	Yellow rays with brownish-purple center, flowers summer to fall
<i>Geranium maculatum</i>	wild geranium	1.5–2	1–1.5	Full sun – part shade	Medium	Pale pink, deep pink, or lilac flowers in spring
<i>Grindelia lanceolata</i>	gum plant	2–3	1.5–2	Full sun	Dry – medium	Yellow flowers in summer to early fall
<i>Helenium flexuosum</i>	purple-head sneezeweed	1–3	1–2	Full sun	Medium – wet	Yellow rays with brownish purple center, flowers in late summer to early fall
<i>Helianthus occidentalis</i> , <i>H. divaricatus</i>	sunflower	2–4	1.5–2	Full sun – part shade	Dry – medium	Orange-yellow rays with yellow center, flowers in summer to early fall, tolerant of dry soil and drought
<i>Heterotheca camporum</i>	golden aster	1–3	1–2	Full sun	Dry – medium	Yellow flowers in summer to early fall, drought tolerant
<i>Heuchera richardsonii</i>	alumroot	1–2	1–1.5	Full sun – part shade	Dry – medium	Green flowers in summer, drought tolerant
<i>Heuchera villosa</i>	hairy alum root	1.5–2.5	1–2	Full sun – part shade	Medium	White to pink flowers in summer
<i>Iris virginica</i>	southern blue flag	1–3	1–3	Full sun	Medium – wet	Violet blue with yellow and white crested falls, flowers in late spring, likes to be kept uniformly moist
<i>Lespedeza capitata</i>	bush clover	2–4	1–2	Full sun – part shade	Dry – medium	Creamy white with magenta spot flowers in summer to early fall, drought tolerant
<i>Liatris aspera</i>	rough blazing star	2–3	1–1.5	Full sun	Dry – medium	Purple flowers in late summer to fall, tolerant of drought, heat and humidity,
<i>Liatris ligulistylis</i>	blazing star	1–3	0.5–2	Full sun	Dry – medium	Rose-purple flowers in summer to fall, tolerant of drought, heat and humidity
<i>Liatris pycnostachya</i>	prairie blazing star	2–5	1–2	Full sun	Dry – medium	Lilac-purple flowers in summer, tolerant of drought, heat and humidity, flower stalks may need staking, sometimes treated as biennial
<i>Lobelia cardinalis</i>	cardinal flower	2–4	1–2	Full sun – part shade	Medium – wet	Scarlet red blossoms (but white or rose possible), flowers in summer to early fall, needs consistent moisture, Plant of Merit



## Native Plant List

### Full Sun – Part Shade, page 4 of 5

Scientific Name	Common Name	Height (feet)	Width (feet)	Sun	Water	Other Features
<i>Lobelia siphilitica</i>	blue cardinal flower	2–3	1–1.5	Full sun – part shade	Medium – wet	Blue flowers in summer to early fall, needs consistent moisture
<i>Ludwigia alternifolia</i>	seed box	2–3	1–1.5	Full sun – part shade	Medium – wet	Yellow flowers in summer
<i>Mimulus ringens</i>	Allegheny monkey flower	1–3	0.75–1	Full sun – part shade	Medium – wet	Lilac or purple flowers in summer to early fall
<i>Monarda bradburiana</i>	eastern beebalm	1–2	1–2	Full sun – part shade	Dry – medium	Pink or white flowers with purple, flowers in late spring, Plant of Merit
<i>Monarda fistulosa</i>	wild bergamot	2–4	2–3	Full sun – part shade	Dry – medium	Pink or lavender flowers in summer to early fall
<i>Oenothera macrocarpa</i>	Missouri evening primrose	0.75–1	1–1.5	Full sun	Dry – medium	Yellow flowers in summer, easily grown from seeds
<i>Oenothera pilosella</i>	evening primrose	1–2	1.5–2	Full sun	Medium – wet	Yellow flowers in late spring to early summer, shallow root systems
<i>Packera obovata</i> or <i>Senecio obovatus</i>	round-leaved ragwort	1–1.5	0.5–1	Full sun – part shade	Medium – wet	Yellow flowers in spring
<i>Parthenium integrifolium</i>	wild quinine	2–4	1–2	Full sun	Dry – medium	White flowers in late spring to fall
<i>Penstemon cobaea</i>	dew flower	1–2	1–1.5	Full sun	Dry – medium	White or pink to violet flowers in late spring
<i>Penstemon tubaeformis</i>	white wand beardtongue	1–3	1–1.5	Full sun	Dry – medium	White flowers in late spring
<i>Phlox pilosa</i> var. <i>ozarkana</i>	prairie phlox	1–2	1–1.5	Full sun	Medium	Dark rose to lavender flowers in late spring to summer
<i>Physostegia virginiana</i>	obedient plant	3–4	2–3	Full sun	Medium	Pink or white flowers in summer, can be aggressive
<i>Pycnanthemum tenuifolium</i>	slender mountain mint	2–3	2–3	Full sun – part shade	Dry – medium	White flowers in summer, member of mint family, vigorous grower
<i>Ratibida columnifera</i>	Mexican hat plant	1–3	1–1.5	Full sun	Dry – medium	Yellow flowers in summer, tolerates drought, plants will not flower until second year if planted from seed
<i>Rudbeckia fulgida</i> , <i>R. hirta</i>	black-eyed susan	2–3	2–2.5	Full sun	Dry – medium	Yellow or orange flowers summer to fall, tolerates hot and humid summers
<i>Rudbeckia missouriensis</i>	Missouri coneflower	2–3	1–2	Full sun	Dry – medium	Orange-yellow flowers in summer to early fall, tolerates heat and humidity

## Native Plant List

### Full Sun – Part Shade, page 5 of 5

Scientific Name	Common Name	Height (feet)	Width (feet)	Sun	Water	Other Features
<i>Rudbeckia triloba</i>	brown-eyed Susan	2–3	1–1.5	Full sun	Medium	Yellow rays with brown center, flowers summer to early fall
<i>Ruellia humilis</i>	wild petunia	1.5–2	1.5–2	Full sun – part shade	Dry – medium	Lavender or lilac blue flowers in late spring to early fall
<i>Salvia azurea</i>	blue sage	3–5	2–4	Full sun	Dry – medium	Azure blue flowers in summer to early fall, tolerates drought
<i>Scutellaria incana</i>	skullcap	2–3	1.5–2	Full sun – part shade	Dry – medium	Blue flowers in summer
<i>Scutellaria ovata</i>	heart-leaved skullcap	1–2	0.75–1.5	Full sun	Dry – medium	Blue to purple flowers in late spring to summer, tolerates drought, easily grown from seed, may go dormant after flowering
<i>Sedum ternatum</i>	three-leaved stonecrop	0.25–0.5	0.5–0.75	Full sun – part shade	Medium	White flowers in late spring, nice groundcover
<i>Silene caroliniana</i>	wild pink	0.75–1	0.75–1	Full sun – part shade	Medium	Pink flowers in spring
<i>Solidago caesia</i> , <i>S. drummondii</i> , <i>S. flexicaulis</i>	blue stem goldenrod, goldenrod, broad leaf goldenrod	1.5–3	1.5–3	Full sun	Dry – medium	Yellow flowers in late summer
<i>Symphyotrichum anomalum</i>	aster	2.5–3	2–2.5	Full sun	Dry – medium	Violet-purple flowers in summer through fall, tolerates some shade and drought
<i>Symphyotrichum oblongifolium</i>	aromatic aster	1–3	1–3	Full sun	Dry – medium	Blue or purple flowers in late summer to early fall, tolerates poor soil and drought
<i>Symphyotrichum oolentangiense</i> , <i>S. patens</i> , <i>S. turbinellum</i>	leave spreading aster, aster, smooth aster	2–3	1.5–2	Full sun	Dry – medium	Blue or violet rays with yellow center flowers in fall, tolerates drought
<i>Talinum calycinum</i>	fameflower	0.5–0.75	0.75–1	Full sun	Dry – medium	Rose, pink or red flowers in summer
<i>Tradescantia ohimensis</i>	Ohio spiderwort	2–3	1.5–2.5	Full sun – part shade	Dry – medium	Deep blue to rose blue flowers in late spring
<i>Verbesina helianthoides</i>	crown beard	2–3	1–2	Full sun	Dry – medium	Yellow flowers in early summer, easily grown from seeds
<i>Vernonia fasciculata</i>	ironweed	2–4	1.5–3	Full sun	Medium – wet	Purple flowers in summer, easily grown from seeds
<i>Zizia aptera</i> , <i>Z. aurea</i>	zizia, golden Alexander	1–3	1–1.5	Full sun – part shade	Medium	Yellow flowers in late spring

## Native Plant List

### Part Shade – Full Shade, page 1 of 1

Scientific Name	Common Name	Height (feet)	Width (feet)	Sun	Water	Other Features
SEDGES						
<i>Carex albicans</i>	white tinged sedge	1–1.50	1–1.50	Part shade – full shade	Medium	Flowers bloom late spring, good year round foliage
GRASSES						
<i>Diarrhena obovata</i>	American beakgrain	2–3	2–3	Part shade – full shade	Medium – wet	Insignificant green flowers with yellow anthers, flowers in summer to early fall
HERBACEOUS PERENNIALS						
<i>Asarum canadense</i>	wild ginger	0.5–1	1–1.5	Part shade – full shade	Medium – wet	Flowers in spring but underneath vegetation, Plant of Merit
<i>Chelone glabra</i>	turtlehead	2–3	1.5–2.5	Part shade	Medium – wet	White with pink tinge blooms late summer to early fall, best in moist to wet soil
<i>Dodecatheon meadia</i>	shooting star	0.75–1.5	0.75–1	Part shade – full shade	Medium	White, pink, or purple flowers in late spring, difficult to grow from seed, dormant in summer
<i>Gentiana andrewsii</i>	closed genitian	1–2	1–1.5	Part shade	Medium	Dark blue flowers in early fall
<i>Heuchera americana</i>	coral bells	1–2	1–1.5	Part shade	Medium	Greenish-white with red tinge flowers in summer
<i>Iodanthus pinnatifidus</i>	purple rocket	1–3	1–2	Part shade – full shade	Medium – wet	Light violet fading to white blooms, flowers in late spring to early summer
<i>Iris cristata</i>	dwarf crested iris	0.5–0.75	0.5–1	Part shade	Medium	Petals are pale blue with gold-crests, flowers in spring
<i>Mertensia virginica</i>	Virginia bluebells	1.5–2	1–1.5	Part shade – full shade	Medium	Blue flowers in spring, plants go dormant in summer
<i>Phlox divaricata</i>	wild sweet William	0.75–1	0.75–1	Part shade – full shade	Medium	rose/lavender or violet/blue flowers in spring
<i>Polemonium reptans</i>	Indian physic	1–1.5	1–1.5	Part shade	Medium	Blue flowers in spring
<i>Stylophorum diphyllum</i>	celandine poppy	1–1.5	0.75–1	Part shade – full shade	Medium – wet	Yellow flowers in spring
<i>Tradescantia ernestiana</i>	spiderwort	1–2	1–2	Part shade – full shade	Medium – wet	Rose red to blue or deep purple flowers in late spring, summer foliage may decline
<i>Tradescantia subaspera</i>	zig-zag spiderwort	2–2.5	2–2.5	Part shade – full shade	Medium	Pale to dark blue flowers in late spring to summer
<i>Viola pubescens</i> var. <i>eriocarpa</i>	smooth yellow violet	0.5–1	0.5–1	Part shade	Medium – wet	Yellow flowers in spring

## Resources

Bruckerhoff, Tammy. "Grow Native! Container Garden Contest." *The Berry Basket* 12 (Spring 2009): 4–5. University of Missouri Extension. Web. 1 July 2011.

"Designing with Natives." Grow Native! Missouri Department of Conservation, 2011. Web. 15 July 2011. <<http://www.grownative.org/landscape/designing.asp>>.

"Missouri Botanical Garden PlantFinder." Missouri Botanical Garden. Web. 2 June 2011. <<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder.aspx>>.