

GEORGIA STATE PARKS POLLINATOR PROJECT

This document provides detailed information about the pollinator gardens the Friends of Georgia State Parks and Historic Sites are installing in September 2015. Additional information about pollinator gardens and Georgia butterflies is available through these websites and Facebook pages.¹

The Problem

Pollinators contribute substantially to the economy of the United States and are vital to keeping fruits, nuts, and vegetables in our diets. However, over the past few decades, there has been a significant loss of pollinators (including butterflies) from the environment. The problem is serious and poses a significant challenge that needs to be addressed to ensure the sustainability of our food production systems, avoid additional economic impacts on the agricultural sector, and protect the health of the environment.

The Solution

Friends of the Georgia State Parks and Historic Sites will be installing demonstration pollinator garden at approximately 50 of the 65 state parks in Georgia. Other individuals or organizations can help solve the problem by creating a simple pollinator garden by following the steps below.

Details

The demonstration gardens will consist of a raised bed planted with 11 specific plants. Note: other sample pollinator garden plans are available at <http://www.ealliance.org/sample-pollinator-habitats>.

Step 1 - Select the bed location

If you are building a raised bed, pick the best possible place for the 4'x8' raised bed (instructions below). Ideally the front (the long piece of wood) faces the southern sky. The plants in this pollinator garden design require as much sun as possible, so look for a place out in the open. You will also want to try and be close to a watering source, so you don't have to haul water to the bed or hook hoses together to water the plants while establishing their first year.

Step 2 – Prepare the Area

Materials

Soil (Three options)

1. Best Option: Miracle Grow Natures' Care Organic Raised Bed Soil 1.5 cu ft. bag = 22 bags *OR*
2. Second Option: Miracle Grow Garden Soil for Flowers & Vegetables .75 cu ft. bag = 44 bags *OR*
3. Third Option: Timberline Topsoil 1 cu ft. bags = 18 bags AND Black Kow Composted Cow Manure 50 lb bag = 20 bags

Mulch

Timberline Mini-Pine Bark Nuggets 2 cu ft. = 4 bags

Other/Tools

Tiller	Planting Diagram (included below)
Shovel	Potted Plants (plant information included below)

¹ **Butterflies & Blooms In the Briar Patch** - established Eatonton garden community with resources and tips for groups interested in creating a more extensive public pollinator habitat:

<https://www.facebook.com/pages/Butterflies-Blooms-in-the-Briar-Patch/489509811145318>

Monarchs Across Georgia, <http://www.ealliance.org/monarchs-across-ga>

also Facebook Page: <https://www.facebook.com/pages/Monarchs-Across-Georgia/129261837147379>

North American Butterfly Association – Georgia Chapter, <http://nabageorgia.weebly.com/>

also Facebook Group: <https://www.facebook.com/groups/nabageorgia>

Garden Fork
Tarp (optional)
Wheelbarrow (optional)

Trowels
Watering Hose

Step by Step:

1. Prepare the soil

The soil where you plan to build the bed needs to be either tilled, or double dug with a shovel. If you till, it needs to be tilled to a depth of about 18-24". If you encounter any rocks, roots, or other debris while tilling, please move those to another area. If you do not have a tiller, you will need to double dig with a shovel. https://en.wikipedia.org/wiki/Double_digging Dig the top layer of the soil off, down to the level of your shovel. You will need to place this soil to the side -in a wheelbarrow, or on a tarp for safekeeping. You will need to dig a trench the length of your bed. After digging all of this soil out, you will take a garden fork, and break up the soil the depth of the fork the length of that trench. This is not easy as the soil is often very compacted and you will need to work very hard to really loosen the soil. The more work you put in on the soil, the better your garden will look down the road. Once you have loosened the bottom part of the trench, you will begin again on the top of the soil next to this trench with your shovel, and put the soil you remove in the first trench. When you get down to the level of your shovel, you will loosen the soil with your garden fork again. Repeat this process until you work across the entire width of the bed and then finish by putting the soil from your first trench into the last one.

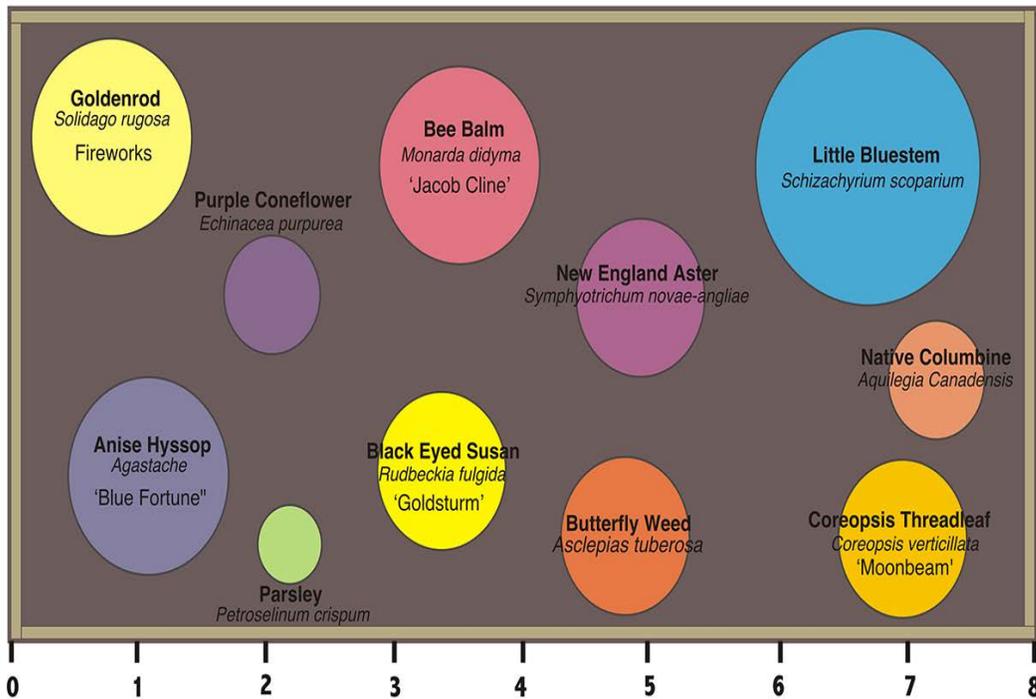
2. **Plants can be placed in the ground or in a raised bed. If choosing the raised bed option, place the constructed raised bed structure over the area that you have prepared and dig in the corner posts.** (See directions below for constructing a raised bed).
3. **Add the soil.** Now you will add your bags of soil and mix them into the soil below with your shovel. When mixing is complete, use a rake or shovel to spread the soil evenly across the length and width of the bed.
4. **Position the plants.** Arrange your plants according to the planting diagram provided.
5. **Dig holes for the plants.** Dig a hole that is approximately the size of the pot.
<http://www.hgtvgardens.com/perennials/how-to-plant-perennials>
6. **Plant carefully.** Take the plants carefully out of the pots. If any of the plants appear to be pot-bound, gently tickle (loosen) the roots before placing the plant into the hole. Make sure that the crown of the plant, that is, where the plant stem meets the roots, is about 1" above the soil line when you place it in the ground. Gently pack the dirt around the plant.
7. **Mulch the bed.** After all of the plants are in the ground, mulch the bed thoroughly, to a depth of at least 2".
8. **Water the bed.** Water the bed thoroughly, until the soil is saturated to a depth of 2".

Step 3 – Maintain Your Raised Bed

1. **Have a plan.**
2. **New plantings need water.**
 - a. Soil should stay relatively moist for first month.
 - b. One inch of water per week = six gallons per square yard per week
3. **Occasional weeding will be needed.**
4. **Do NOT deadhead at the end of the season** (see additional information below on deadheading).
Birds and chrysalides use the winter garden.
5. **Add mulch when needed.**
6. **Divide plants when necessary.** *As a rule plants sleep the first year, creep the second year and leap the third year!*
7. **If necessary, take steps to deter deer** (see additional information below on deer prevention).

SUPPORTING MATERIAL

PLANT DIAGRAM



PLANT INFORMATION

Common Name	Scientific Name	Bloom Season	Pollinator Host Plant?	Height (in inches)	Width (in inches)	Attracts Birds?	Bloom color
Coreopsis Threadleaf	<i>Coreopsis verticillata</i> 'Moonbeam'	Spring	No	24	24		Yellow
Native Columbine	<i>Aquilegia Canadensis</i>	Spring	No	36	20		Red/ Yellow
Bee Balm	<i>Monarda didyma</i> 'Jacob Cline'	Spring & Summer	Yes - Hermit Sphinx Moth	48	24		Scarlet
Black Eyed Susan	<i>Rudbeckia fulgida</i> 'Goldsturm'	Spring & Summer	Yes - Silvery Checkerspot Butterfly	29	23	Yes	Yellow
Butterfly Weed	<i>Asclepias tuberosa</i>	Summer	Yes - Monarch Butterfly	36	18		Orange
Purple Coneflower	<i>Echinacea purpurea</i>	Summer	Yes - Silvery Checkerspot Butterfly	47	10	Yes	Purple
Parsley	<i>Petroselinum crispum</i>	Fall	Yes - Black Swallowtail Butterfly	24	10		Green
Little Bluestem	<i>Schizachyrium scoparium</i>	Fall	Yes - Crossline Skipper and Delaware Skipper Butterflies	36	36	Yes	Reddish
New England Aster	<i>Symphotrichum novae-angliae</i>	Fall	Yes - Pearl Crescent Butterfly	36	24	Yes	Purple
Goldenrod Fireworks	<i>Solidago rugosa</i> 'Fireworks'	Fall	No	36	24	Yes	Yellow
Anise Hyssop	<i>Agastache</i> 'Blue Fortune"	Summer & Fall	No	36	30	Yes	Blue

How to Build A 4' by 8' Raised Bed

Adapted from <http://www.sunset.com/garden/backyard-projects/ultimate-raised-bed-how-to>

Materials

Four 16-inch-long pressure-treated 4-by-4s, to act as corner posts
Two 4-foot-long pressure-treated 2-by-12s, for bed ends
Two 8-foot-long pressure-treated 2-by-12s, for bed sides
Twenty-four 3.5-inch #10 flat-head wood deck screws

Tools

Drill
1/8-inch drill bit & screwdriver bit
Table saw (if lumber is not pre-cut to size specifications)
Ruler and pencil
Level (optional)
4 adjustable woodworking bar clamps: 2 short (12 -inches) and 2 long (6-foot) (optional)

Step-by-Step

1. Frame

The bed will be built *upside down*. Working on a flat surface (such as a patio), set a 4-foot 2-by-12 board on its narrow side edge on the pavement; at one end of the board, place a 16-inch 4-by-4 corner post upright and flush with the end of the board. Use two adjustable woodworking clamps—or a buddy—to keep both pieces of wood flush on the sides and bottom.

2. Drill to attach

Before securing the post to the 4-foot board, help prevent the wood from splitting by pre-drilling three evenly spaced holes in the board with the 1/8" drill bit. Then, secure the board to the post with three, 3.5" screws. (Once the board is secured to the post, the woodworking clamps can be removed if they are being used.)

3. Repeat to complete

Now that the previous step's post-adding techniques are mastered, repeat those techniques to attach a corner post to the other end of the 4-foot board. Repeat this technique to add the remaining 4-foot board and attach a corner post to each end.

The two 4-foot ends of the raised bed are now completed and it is time to attach the bed's longer sides: Position the first of the 8-foot 2-by-12 side boards between the two 4-foot bed ends. Make sure the 8-foot board is flush with each corner post (hold them steady with the woodworking clamps—or grab that buddy again), and then pre-drill each board end with three holes and secure it to a post with three, 3.5" screws. Repeat to attach the remaining 8-foot side board to the awaiting corner posts.

The rectangular bed is now complete!

4. Anchor the bed. Dig a 5 to 6 inch deep hole for each of the corner posts. Then sink each post into the ground.

5. Level the bed. Make sure the bed is level on all sides (using a level if you have one); this will ensure that when watering, the water will spread evenly through the soil. Then backfill the corner holes with dirt to steady the posts.

DEADHEADING PLANTS (MAINTENANCE)

Deadheading plants

Deadheading is the term used for the removal of flowers from plants when they are fading or dead. It is done to keep plants looking attractive and encourage more blooms, whether in beds and border, containers or hanging baskets.

Reasons for deadheading

Most flowers lose their attraction as they fade, spoiling the overall appearance of beds, borders and containers, and are best removed. However, there are other reasons:

- Regular deadheading directs energy into stronger growth and more flowers. Once the flowers are pollinated; seed heads, pods or capsules form at the expense of further growth and flower development
- It can prevent plants with numerous petals, such as **peonies**, some **camellias** and many **roses**, scattering debris widely

When and what to deadhead

Remove the spent flowers as soon as they look scruffy. In practice, gardeners usually have to remove them as soon as they can and, thankfully, a few days delay won't make a difference.

Plants to deadhead

- **Bedding plants:** Tender plants growing in beds, **containers** and **hanging baskets** respond well to deadheading. The faded blooms of argyranthemums, cherry pie, pansies, polyanthus and petunias can be removed with finger and thumb
- **Geraniums (*Pelargonium*):** Hold the faded flower stalk near the base and pull downwards. The old bloom will snap out cleanly
- **Roses:** Gently snap off the faded flowers, breaking the stalk just below the head (also see 'Where to cut' below)
- **Shrubs:** Among the most important shrubs to deadhead are **rhododendron** (and azaleas), **camellias**, lilacs and **tree peonies**. Use finger and thumb to pick or snap off each dead head where it joins the stem or secateurs to cut just below the flower head. Avoid damaging buds or developing growths immediately below the flower
- **Climbers:** Deadhead climbers where practical, particularly *Eccelemocarpus* as it rapidly produces seed pods
- **Bulbs:** Remove flowers, along with the seed capsule. However, leave the green flower stalk in place as this photosynthesizes (produces food), helping to build up the **bulb** to flower well next season

How to do it

- **With finger and thumb**

The simplest method is to just pinch off the faded blooms with finger and thumb. Aim to remove the flower with its stalk to ensure the plant looks tidy.

- **With scissors or a knife**

To deadhead plants with tough or stringy stems, use scissors or a knife. This includes **dahlias**, calendulas, marigolds and shrubs such as lilac.

Where to cut

- For **border perennials and annuals**, trim away the old flowers, generally cutting back to a bud or leaf
- Some **hardy geraniums, delphiniums and lupines** produce a second flush of flowers if cut back close to ground level. Others, such as lady's mantle and oriental poppies, can still be cut back near ground level but, usually, only produce fresh foliage
- Gently snap off the faded flowers of **roses**, breaking the stalk just below the head (rather than cutting just above a leaf, as the snapping method results in more blooms being produced more quickly on repeat-flowering cultivars)

No need to deadhead?

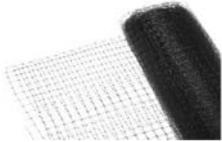
Should I be deadheading everything? Thankfully, no.

- Some obliging plants do not need deadheading. Typically **fuchsias**, bedding lobelia and salvias either don't set much seed or neatly deadhead themselves
- Do not remove the faded flowers on plants that produce seed loved by birds, including *Rudbeckia*, cornflower and sunflower
- There is no need to deadhead rose cultivars that bear hips or other plants that bear berries in the autumn

- Leave plants that have ornamental seeds or fruits without deadheading; examples include alliums; love-in-a-mist (*Nigella*), stinking iris (*Iris foetidissima*) and bladder cherry (*Physalis alkekengi*)

DETECTING DEER (MAINTENANCE)

Here are a few suggestions from various sources...

- Deer Fencing – Put up corner posts (7.5 -foot PVC pipe) and attach with zip-ties to surround your garden with deer fencing. .
Easy Gardener 6050 DeerBlock 7-by-100-Foot Netting is sold on Amazon.
 - Protects landscapes from deer
 - Stops animals from damaging garden areas
 - Easy to install, and reuse
 - UV- resistant
- 
- Barbara Fornal, an herbalist, has published this recipe for "deer juice" that you can try:
 - 1 bar of Fels Naptha soap
 - 2 bunches of scallions, roughly chopped
 - 2 heads of garlic, cloves separated
 - 4 eggs
 - Chili powder, lots
 - 1. Fill 1/2 of a 5-gallon bucket with hot water.
 - 2. Shave soap into bucket to dissolve.
 - 3. Place scallions, garlic, eggs, and chili powder in a large piece of doubled cheesecloth. Tie up ends of cloth tightly; use a wooden spoon to crack the eggs. Place pouch in bucket.
 - 4. Fill the bucket with more water; cover tightly with lid. Place in shaded area for one week.
 - 5. Transfer in batches to a pump sprayer. Apply after each rainfall or every 2 weeks.
 - Deer rely heavily on their sense of smell for feeding, so adding patches of strongly scented herbs - from garlic and chives, to mint and lavender - can mask the appealing aroma of nearby plants that you want to protect.
 - Deer fear new, unfamiliar objects. Though they aren't always attractive, scarecrows, sundials, and other garden ornaments - especially those with movable parts - make deer skittish. Use them in combination with wind chimes or bright lights for added effect.