

2024 PLANTING GUIDE for Detroit, MI Pollinator Habitat Kits

The work to ensure your pollinator kit and native plants successfully find their forever home in your soils *starts now*. Developing and finalizing a planting plan before you obtain your habitat kit will ensure that your plants can be installed immediately and maintained accordingly. This guide contains information to help you craft a perfect planting plan, achieve your project goals, and create valuable, long-term pollinator habitat on your farm or garden.

Sections in this guide:

- I. Initial care of plant trays - *page 2*
- II. Site preparation, weed management, and mulch - *page 2*
- III. Planting considerations: timing, design, and spacing - *page 3*
- IV. Planting Instructions: staging, planting, and watering - *page 5*

Appendices

- A. Habitat Kit Planting Outline - *page 8*
- B. Materials, Supplies, and Equipment – *page 8*
- C. Habitat Kit Species List - *page 9*
- D. Example Planting Layout – *page 10*

If you have questions or need technical assistance:

Stefanie Steele - (586) 225-8950

stefanie.steele@xerces.org

What's in the habitat kits?

The Detroit Pollinator Habitat Kits each contain about six trays of 32 two-inch pot transplants (2.19" diameter by 3" depth) of native perennial wildflowers, grasses, sedges, and 3 native shrub plugs (2.25" diameter by 5" depth), totaling 167 plants. These plants have been documented to support a variety of pollinators and beneficial insects from spring to fall. A species list for the Detroit Kits (Appendix C) details the plant species and number included in each kit, their bloom period, flower color, height, and summary insect notes. This plant kit was designed to be planted in full sun to part-sun and soil moisture levels of dry-medium to medium. **Remember to take photos throughout the prep and planting process!**

Important:

- Transport: Each flat of 32 2" pots is approximately 9.12" by 18.1" or 1.2 square feet. *Plan accordingly for transporting the kit to your project site. Do not stack flats – plants will be damaged!* To accommodate **one kit** of 6 flats per kit + shrubs, you will need a total cargo area roughly 7.2 square feet or about 3.5 ft by 2.2 ft in size.
- Plant the plugs within a few days and no more than 2 weeks of receiving your plants.

I. Initial care of plant trays

Plants should be planted within a few days of pick-up, but if needed, they can be left in their trays for up to two weeks until you are ready to transplant them into your habitat area. Regardless of whether your delay is a few days or a few weeks, you must care for your plants in their trays until they are planted.

1. Place plant trays in an area that receives shade or dappled shade. Trays can rest on the ground as long as the plants are protected from animal damage (mostly rabbits and/or squirrels).
2. Regularly water your trays, taking care not to over water them. Frequent, light watering multiple times a day is more effective at keeping your plants healthy and the soil moist compared to an occasional heavy soak.

II. Tips for site preparation and weed management

Final site preparation

Depending on your site preparation practice, you may want to complete one final weed control sweep just before planting out your kit to minimize weedy competition. This could be hand weeding, a shallow till of the top inch of soil, flame weeding or mowing down new weed growth, terminating a cover crop, finally pulling back your smothering tarp or solarizing plastic, or timing your sod removal to coincide with the subsequent planting. Regardless of your site preparation method, the planting area should be relatively smooth and level - not furrowed or strewn with chunks of soil.

Unless your site preparation plan requires cultivation, it's best practice to minimize soil disturbance preceding a planting as tillage can stimulate a flush of new weed germination and growth. Immediately applying a 2-3 inch mulch weed barrier after your final site prep step and covering the bare soil will prevent any new weed growth (see subsequent mulch note on weed management).

For detailed guidance on site preparation practices, please see [Xerces Organic Site Preparation](#) guide and comparative overview table. Additionally, timelines for plastic smother or stale seed bed as site prep practices are well-presented in the [NRCS New Hampshire - Transplanting Herbaceous Plant Plugs](#) implementation form (the last four pages of the pdf).

Mulch application

Following the final step in your site prep we highly recommend you lay down your choice of 2-3 inches of a loose mulch material (wood chips, leaves, weed-free straw) or a rollable mulch (paper, coir, straw netting). Loose mulch could be applied before or after planting; rollable mulch must be laid in place before planting. In either case, a layer of mulch will help your plants establish well in a weed-free environment and maintain soil moisture in their first year of growth.

We do not recommend using plastic or landscape fabric as a mulch barrier. These materials will prevent the natural outward establishment of your native plants from seed and rhizome. We also do not recommend using dyed wood chips, black walnut wood chips, or wood chips whose origins may be from chemically-treated wood. Following the first year or two of growth, additional applications of mulch should largely be unnecessary and may even prevent your plants from seeding out into the surrounding space. As the mulch decomposes, your native plants should naturally reseed or spread via rhizomes into the exposed soil space (rhizomes are underground “stems” that grow into new plants).

How much wood chips do I need?

We recommend using 2-3 inches of wood chips across your planting area. For denser plantings you will need about 2.31 cubic yards of mulch at 3 inch depth to cover 250 square feet, and about 4.17 cubic yards of mulch at 3 inch depth to cover 450 square feet. Feel free to search “mulch calculators” to find out how much wood chips you need for your specific area.

Note if you are using wood chips: Consider reaching out to local arborists in your area to inquire about getting a free or low cost chip delivery to your site. If you are looking for larger wood pieces like logs, you can also request these materials from arborists.

Weed management

During the first growing season - and especially important if you forgo applying a mulch weed barrier - you should plan to carefully pull, cut, or otherwise control weeds throughout the habitat area. Scuffle hoes are especially useful when new weed growth has just emerged and - when used with regularity - can keep your planting weed free. As you weed, take care to not accidentally uproot or cut your native plants. Young growth of native plants may be difficult to distinguish from undesirable weeds. Stake flags can be used to mark desirable natives in the kit to help with the weeding process and identify the plants that you want to keep and those you want to remove.

After a few years of regular weed control, the prolific growth and dominant cover of your native plants should prevent most weeds from becoming a nuisance. Especially problematic weeds (field bindweed, Canada thistle, burdock, pigweed, dock, reed canary grass, sweet clover, others) should always be gently hand pulled or cut just below the soil surface and, if seed is present on the plant, removed entirely from the habitat area. For weeds that are well rooted into the ground and whose removal could kill an adjacent native plant, sever the plant at the base of its main stem either just below or at the soil surface with a garden knife or other tool, leaving the main root mass undisturbed in the soil.

Soil amendments

In most cases, the native plants included in these kits do not require any fertilizers, composts, or other amendments. Adding a bit of compost or other organic growing media (vermicompost, biochar, etc.) to each plant hole may add a helpful microbiota or nutrient boost, though this step certainly isn’t necessary if you’d like to save time during your planting.

If you know your soils have been significantly altered, we recommend consulting your county's Extension, Soils, or Agronomy department (or other agriculture conservation professional) on appropriate soil restoration and remediation practices before planting.

III. Planting Considerations

Timing

For best establishment success, plant the entire habitat kit within a few days or no more than two weeks of receiving your plants and, most importantly, when your site preparation is complete. The sooner your plants are in the ground, the sooner they will be able to adjust to your soils, build permanent root systems, and maximize new leafy growth. The longer the plants remain in their trays, the more susceptible they are to drying out, becoming root bound, and even dying.

Planting design

Your habitat kit planting is a freeform garden and will not always follow the same conventions of a manicured horticultural design. We recommend the following practices to maximize habitat value for wildlife, create attractive drifts of blooms, and improve your planting efficiency.

- Plant the same species in groups of 3 - 6 to improve garden aesthetics and create the larger bloom displays that some pollinators prefer. For example, 3 plants *of the same species* are planted near each other. Planting the same species in groups can help provide a better visual of floral resources and allow for more efficient foraging for pollinators.
- Use grasses and sedges to create natural drifts between clusters of flowers.
- If you are going for a very manicured look, you may wish to purposely mix groups of plants with different bloom periods or flower colors.
- Take care not to overwhelm a few shorter species with many tall species; and, plant taller species in the interior of the planting and shorter species along the habitat perimeter edge. The shorter 2' stature of species like sand coreopsis and nodding wild onion would do best along the habitat's perimeter edge.
- Wild strawberry is a low growing ground cover and over time, the wild strawberry will send out runners over the ground and provide a living mulch cover. Consider planting the strawberries towards the center of your habitat area so they have room to spread outward as they grow.
- Shrubs - Keep these factors in mind when deciding on a location to plant, and the shrubs do not necessarily need to be planted next to each other:
 - The four white wild indigo will reach about 3-4 tall and 2-3 feet wide. These legume/sub-shrubs are sometimes difficult to propagate and we are hopeful the nursery will be successful growing them this year.

- The one buttonbush shrub will do best in full sun to part sun and are generally about 6-8' wide and tall. These shrubs will grow well in medium moist soils, but will also do well in wetter soils. If you have a low wetter spot, consider planting your buttonbush there.
- The two black currant shrubs do best in full sun and are generally about 3-4' wide and tall.

For example, in one section of an area you could plant 3-6 sand coreopsis (early-mid bloom), 3-6 mountain mint (mid bloom), 3-6 smooth blue asters (late bloom), 3 butterfly milkweeds (mid bloom/monarch host plant), and 2-3 wild strawberry (early bloom/ground cover). Then, plant 3-6 June grass on one end of the flowers and 3-6 plains oval sedge on the other end to create a natural grass and sedge “drift” between this flower cluster and the next. To see an example of a planting layout for this kit, see Appendix D.

You can incorporate the above design suggestions into your habitat planting by creating a habitat project map (i.e. a “planting map”) that describes the configuration and location of plants. A planting map can be as rough or as detailed as you’d like: broadly noting the species in each flower cluster and grass/sedge “drift” or describing exactly how many plants of each species should be situated in a given location.

Plant spacing

Plants should be planted anywhere from 12” - 24” apart (center-to-center), to fill the entire area of the habitat space. Plants can be planted in any configuration that fits your planting site and aesthetic: they can be arranged in a grid pattern (rectangular), offset (triangular), or planted willy-nilly.

When possible, we recommend a tighter plant spacing to better achieve rapid native plant coverage and suppress weed growth. For the most part, the grasses, sedges and flowers in the kit can be planted between 12” - 18” apart. Regardless of the plant type, don’t overthink or stress about your plant spacing and configuration. The most important part is to get the plants in the ground and growing.

IV. Planting Instructions and Care

Whether you are planting by yourself or in a team, we recommend dividing your habitat planting into manageable sections. Start with a small area and set out a few dozen plants. Then, take the time to familiarize yourself with your soils, the plants, the tools, and the planting steps. This will help you to find a planting rhythm that works for you.

If you are working in a group, you can delegate roles: one person works on layout, a second on prep and digging holes, and a third person working on planting. As one person completes their task, they can cycle over to support the more tedious work - switching roles as needed. If you are working by yourself, we recommend working on the layout of a small section first before returning to prep, dig, and/or plant your plugs. For example, I may prep and dig 12 plant holes before returning to plant in the 12 plants I laid out earlier. You may even find it helpful to position the plants in their pots exactly where you’d like them as part of your initial layout work, but take care not to let the roots of the plants dry out too much in the process.

Layout

1. Stage your plant trays alongside the habitat. You can choose to organize them in whatever way you'd like to help with your plant layout.
 - a. We suggest separating the plants into "short" and "tall" categories, using the *Height* column in the plant list. Within these two groups, keep flowers and grasses/sedges separate. Staging the plants by height makes it easier to plant diverse clusters of short plants together, next to a diverse cluster of tall plants. Mixing different bloom periods in the flower drifts can be helpful so that blooms are spread out across the habitat planting area.
2. Thoroughly water your planting area 24 hours before planting and water plant trays either before or after transporting your plants to your planting area.
3. Begin setting out sets of plant pots. **Keep in mind that as you pull plants from the tray, you may lose track of their identifying tags.**
 - a. Plant the same species in groups of 3 - 6 plants by dropping groups of plants in pots roughly where you'd like the plants to go. Wild strawberry and the shrubs are the exception to planting groups of the same species.
 - b. Intersperse clusters of grass and sedge species amongst the flowers.
 - c. Position taller plants away from the perimeter edges and especially short species, since these can get "floppy" and spill out over the habitat edge or shade-out adjacent plants. (See Appendix C: Kit Species Lists for plant profiles)
 - d. Don't overthink plant design and configuration! The most important part is to get their roots happily in the ground.

4. Planting

Return to the staged plants, opting to either A) Prep, dig, and plant one plant before moving on to the next; or B) Prep and dig holes for many plants before returning to finally plant them in.

5. Prep a planting spot if mulch is present

- a. Scrape the mulch material aside (as required) and down to bare soil or paper/cardboard barrier, creating sufficient bare soil space for you to plant your plug. After planting, keep mulch off your plants' stems.
- b. If an additional mulch barrier is present (e.g. paper or cardboard), cut an "X" with a utility or garden knife or shovel to expose the soil.

6. Dig a hole

- a. Create a hole using a dibble bar, auger, garden knife, trowel, or other planting tool. The hole should be slightly deeper and wider than the plant plug.
- b. Position your plugs 12" - 24" apart (center-to-center). Use a rough measurement of a planting tool - e.g. garden knife or trowel - or other on-hand item to rapidly estimate plant spacing. Keep in mind the increased area required for the shrubs listed above and on the plant list.

7. Planting!

- a. When planting your habitat kit, expect to spend 1 to 2 worker-hour per tray of 32 plants.
 - b. Remove the plants from the plastic pot containers.
 - i. Loosen the plant from the pot by gently squeezing the base of the plastic. Carefully grasp the plant near the base of the stem and gently work the plant plug out of the cell, taking care to protect the roots.
 - ii. If roots are tight around the soil ball of the plant, you can carefully spread them out at the base, so the roots do not continue to grow around the plant, becoming root bound.
 - c. Place the transplant into the hole and position the root collar (where the stem emerges from the plug) level with the surrounding soil. Work the excess soil back around the root mass, gently pressing the soil in with your hand to secure the plant into its new home.
 - i. A small trowels worth of compost could be added to the bottom of the hole at this time prior to the plant (as applicable).
 - d. If mulch is present, use your hand, or other tool to rake the mulch back around the plant.
8. If you have not yet mulched the area, apply 2-3" of your preferred mulch barrier of wood chips, leaves, or weed-free straw - taking care not to damage your plants as you do so. A 5-gallon bucket can be a good tool of getting wood chips or finer mulch materials carefully around plants after they have been planted.
9. Water in the planted plugs using a) a sprinkler to cover all or a portion of the planted area, or b) a hose to gently flood each plant plug, one-by-one, for several seconds.

10. **Remember to take photos throughout the prep and planting process!**

Watering

1. If there is no sufficient rain prior to planting, thoroughly water the planting area 24 hours in advance.
2. Water the newly installed plants immediately after planting. Continue to water for the first growing season so plants consistently receive at least 1 inch of water per week (adjust accordingly during natural rain events or drought conditions).
3. **Regularly check the soil moisture levels to make sure you are watering appropriately.** Use your hand or other small hand tool to move the mulch and soil to feel down to the first 3" of soil. If the soil is still moist, there is sufficient moisture and you don't need to water yet. If the soil in the top 3" is not moist, there is not sufficient moisture and you need to water.

Appendix A: Habitat Kit Planting Outline

AT A GLANCE: The following is a list of the steps needed to successfully plant your habitat project area: from initial plan development to plug planting. See Section IV of this guide for detailed guidance on *Kit Planting* steps.

Habitat Area and Kit Preparation

1. **Take photos throughout the prep and planting process!**
2. Make a plan! Create a rough planting map noting configuration and location of plant species.
3. Receive and care for kits. Place your plant trays in partial shade and water regularly prior to planting.
4. Complete the final site preparation steps for the habitat area.
5. (Highly recommended) Apply a mulch barrier or barriers to cover the bare soil. You must apply your mulch barrier prior to planting if you will be using a rollable mulch barrier like paper, coir, or straw netting. (We do not recommend using plastics or landscape fabrics). Alternatively, you can apply 2-3" of loose mulch now or after planting if you are using loose mulches like wood chips, leaves, or weed-free straw.

Kit Planting

1. **Take photos throughout the prep and planting process!**
2. Water planting area 24 hours prior to planting (if no sufficient rain).
3. Stage the plant trays alongside the habitat area.
4. Thoroughly water the plants just before planting.
5. Following/amend your planting map, begin laying out sets of plant pots.
6. Prep the planting spot by pulling back mulch (if necessary).
7. Dig or drill plant holes at your desired spacing.
8. Plant!
9. If you haven't already done so, spread your choice of natural mulch (wood chips, leaves, or weed-free straw).
10. Water in the planted plants (your choice, before or after spreading mulch - before will retain more moisture initially).

Appendix B: Materials, Supplies, Equipment

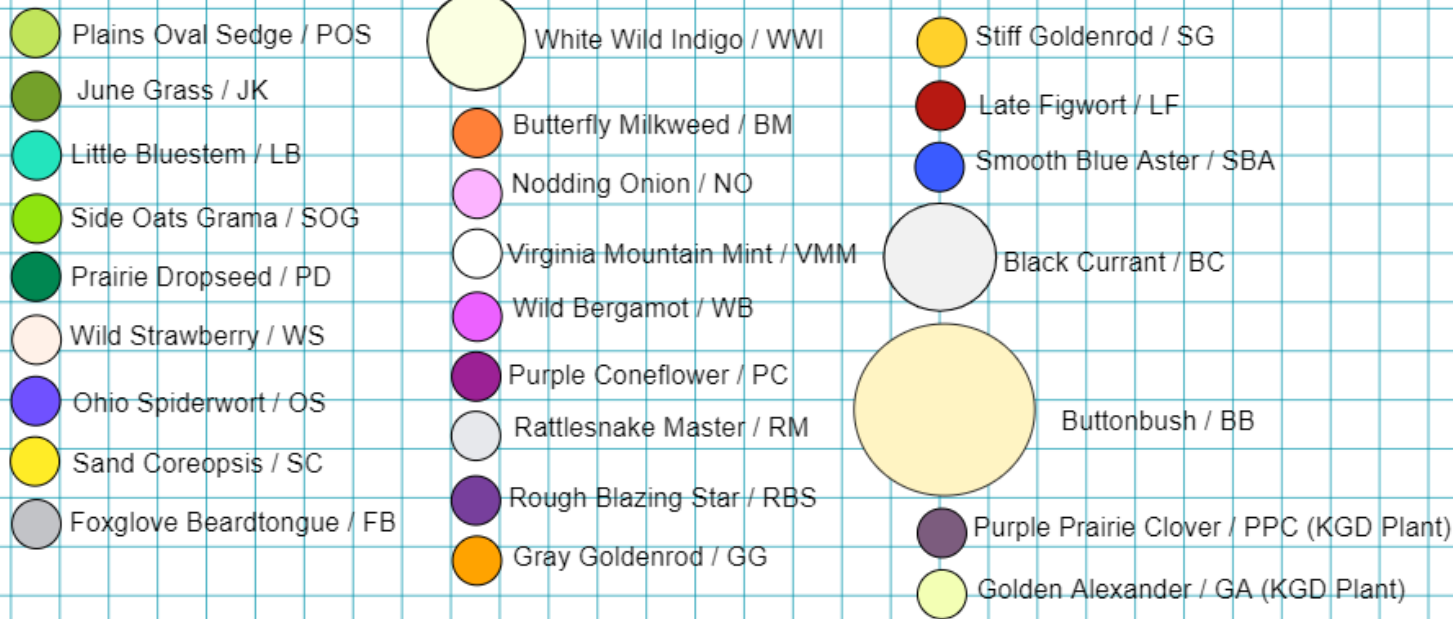
- Planting plan and/or map
- Appropriate vehicle to transport plants
- Predetermined location to store plants until planting
- Labor (organize a planting crew)
- Measuring tape, survey stake flags
- Weeding tools
- Water source and watering supplies
- Planting tools: planting auger, garden knife, trowel, or shovel
- Mulch (e.g. untreated wood chips, leaves, or weed-free straw)
 - o Arborist mulch sources: Chip Drop or contact a local arborist directly
- Wheelbarrow and/or wagon
- Project journal and camera

Appendix C: Kit Species List

2024 Detroit Pollinator Habitat Kit Plant Species List

Bloom Period	Common Name	Scientific Name	Flower Color	Height	Number of Plants	Notes	
Grasses and Sedges							
Early -Mid	1	Plains Oval Sedge	<i>Carex brevior</i>		1'	8	Grasses and sedges are integral components of any pollinator habitat, providing vegetation cover and materials for nesting. Bumble bees will sometimes use the tent-like mass of bunchgrass foliage, nesting just below the soil surface and underneath the messy, grass canopy. Bees, syrphid flies, and beetles will also feed on their accessible and abundant pollen. Lastly, grasses and sedges are important larval-hosts for many different skipper butterflies and a select few Ctenuchinae moth species.
	2	June Grass	<i>Koeleria macrantha</i>		2'	8	
Mid-Late	3	Little Bluestem	<i>Schizachyrium scoparium</i>		3'	8	
	4	Side Oats Grama	<i>Bouteloua curtipendula</i>		2'	8	
	5	Prairie Dropseed	<i>Sporobolus heterolepis</i>		2'	8	
Forbs							
Early -Mid	6	Wild Strawberry	<i>Fragaria virginiana</i>	white	6"	8	This low growing ground cover plant offers spring blooms for small carpenter bees (<i>Ceratina</i>) and parasitoid chalcid wasps
	7	Ohio Spiderwort	<i>Tradescantia ohiensis</i>	blue	3'	8	An early nectar and pollen resource for native bees including bumble bees, as well as wasps, flies, and beetles
	8	Sand Coreopsis	<i>Coreopsis lanceolata</i>	yellow	2'	8	This early bloomer can hold its own among grasses and taller species; bees and syrphid flies are common visitors
	9	Foxglove Beardtongue	<i>Penstemon digitalis</i>	white	4'	8	A prolific nectar producer and visited by a huge diversity of butterflies, moths, and native bees including mason bees (<i>Osmia</i>); stem nesting resource
10	White Wild Indigo	<i>Baptisia alba</i>	white	4'	4	An early blooming legume, bumble bees and other larger long tongued bees access nectar and pollen from the deep flowers; stem nesting resource	
Mid	11	Butterfly Milkweed	<i>Asclepias tuberosa</i>	orange	3'	8	Milkweeds are host plants for the monarch butterfly and nectar sources for many bees; stem nesting resource (oleander aphids can be common)
	12	Nodding Wild Onion	<i>Allium cernuum</i>	pink	2'	8	These delicate, hanging flowers attract a diversity of native bees, including leaf-cutter bees (<i>Megachile</i>) and many beneficial insects
	13	Virginia Mtn Mint	<i>Pycnanthemum virginianum</i>	white	3'	8	Abundant nectar reserves attract an amazing array of wasps, bees, flies, beetles, and butterflies
	14	Wild Bergamot	<i>Monarda fistulosa</i>	purple	4'	8	Sphinx moths, hummingbirds, and long tongued bees like bumble bees (<i>Bombus</i>) are common visitors; stem nesting resource
	15	Purple Coneflower	<i>Echinacea purpurea</i>	purple	4'	8	Attracts a diversity of pollinators, including butterflies, native bees, and beneficial insects; stem nesting resource
	16	Rattlesnake Master	<i>Eryngium yuccifolium</i>	white	5'	8	This uniquely shaped plant attracts a diversity of pollinators, including butterflies, native bees, and beneficial insects; stem nesting resource
	17	Rough Blazing Star	<i>Liatris aspera</i>	purple	3'	8	A monarch butterfly magnet, <i>Liatris</i> also support swallowtails, skippers, and sulfurs; as well as long- and short-tongued bees; stem nesting resource
Late	18	Gray Goldenrod	<i>Solidago nemoralis</i>	yellow	3'	8	Goldenrods are frequented by beneficial solitary wasps, soldier beetles, many native bee species, butterflies, and more; stem nesting resource
	19	Stiff Goldenrod	<i>Oligoneuron rigidum</i>	yellow	4'	8	This late blooming, hairy stemmed, broad leafed goldenrod attracts similar pollinators as <i>Solidago</i> species, and the leaves are used as nest materials
	20	Late Figwort	<i>Scrophularia marilandica</i>	green	6'	8	Unique and unsuspecting, nectar rich flowers that attract a diversity of native bees, beneficial wasps, butterflies, and even hummingbirds
	21	Smooth Blue Aster	<i>Symphotrichum laeve</i>	blue	4'	8	Asters attract a variety of bee species, including green sweat bees (<i>Agapostemon</i>), and many butterflies, wasps, flies, and other insects; stem nesting resource
Shrubs							
Early -Mid	22	Black Currant	<i>Ribes americanum</i>	white	4'	2	Flowers of this edible berry attract pollinators like bumble bees, small carpenter bees, sweat bees (<i>Lasioglossum</i>), and mining bees
Mid	23	Buttonbush	<i>Cephalanthus occidentalis</i>	white	8'	1	Buttonbush attracts a large number of pollinators including a diversity of solitary native bees, bumble bees, and sphinx moths
Total Number of Plants:					167		

KEY



2024 Detroit Pollinator Habitat Kit
Planting Layout Example

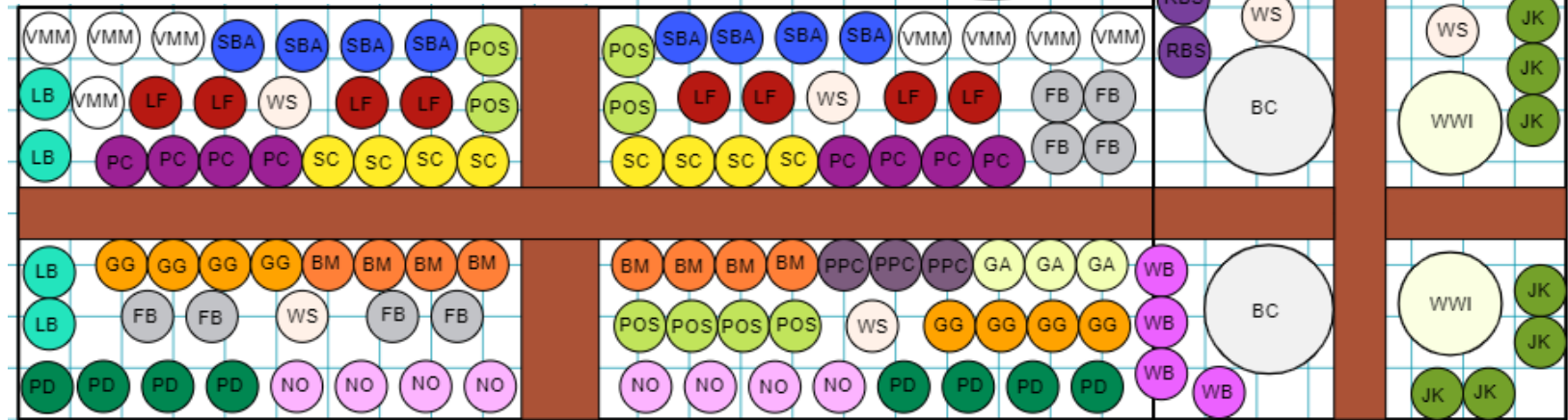
Squares: each square represents 1 square foot (sqft)

Total Area: Two 8x22 ft areas = 350 sqft

Brown Paths: occupy ~ 85 of the 350 sqft

Buttonbush: located just outside of the primary planting, is occupying a 6x6 ft area = 36 sqft

Border: create a buffer/border around your planting area(s)



Border example: 4 foot buffer from a sidewalk -
you can mow this border to keep a "nice" edge or add logs/stones/bricks/etc as a border