

# Meadow & Woodland Toolkit

PEOPLE FOR POLLINATORS

People for Pollinators is a 8,700 sq.ft planted meadow surrounded by fencing, with a planted shrub layer on the south side of the fence, adjacent to woodland edges and open fields abutting the Lincoln Public Schools property. The site is situated on the northernmost portion of a 10.2-acre site owned and protected by LLCT. The soils are mesic and nearly all of the site is in full sun.

Since 2016, LLCT has managed the site for native pollinators by direct seeding and planting a variety of forbs, graminoids and shrubs. Approximately 25-35% of the fenced in meadow remains as non-native grasses and common weeds.

After an initial survey of plant species diversity on the site by Evan Abramson and Adam Kohl of Landscape Interactions in 2019, Dr. Gegeer surveyed the site for bumblebees and at-risk butterflies multiple times in 2020. While pollinator populations at the site were categorized as “high abundance, high diversity” by Dr. Gegeer, a lot of room remains for improvement, not only in native plant species diversity (early season pollen sources and host plants in

## EXISTING CONDITIONS

particular) but also with regards to aesthetics and the visitor experience.

LLCT’s goals for the site include expanding public education and programming; access to the location, therefore, needs to be more clear and welcoming. The meadow is currently surrounded by an 8 ft. tall chain link fence, with only one gate for entry, situated on the northern side. The fence was initially installed to prevent deer browse and to deter dog

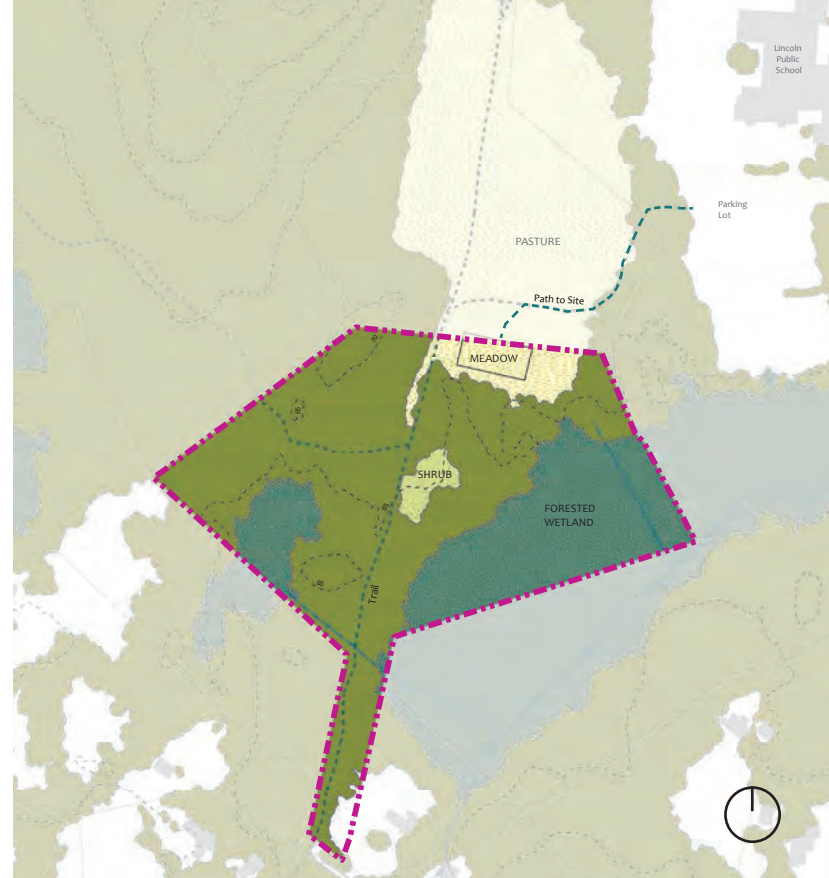


walkers from allowing their dogs off leash. The location is somewhat hard to find, although it is marked by a sign at the edge of the Lincoln Public Schools parking lot. A narrow path through woods and a field leads visitors to the site, with a mowed section of path branching off to the south and leading up to the fence.

While LLCT has been actively stewarding People for Pollinators for several years, no permanent water source exists and establishing new plantings remains a challenge. Additionally, the shrubs planted between the fence and the surrounding woods are being pressured by invasive oriental bittersweet and weeds.

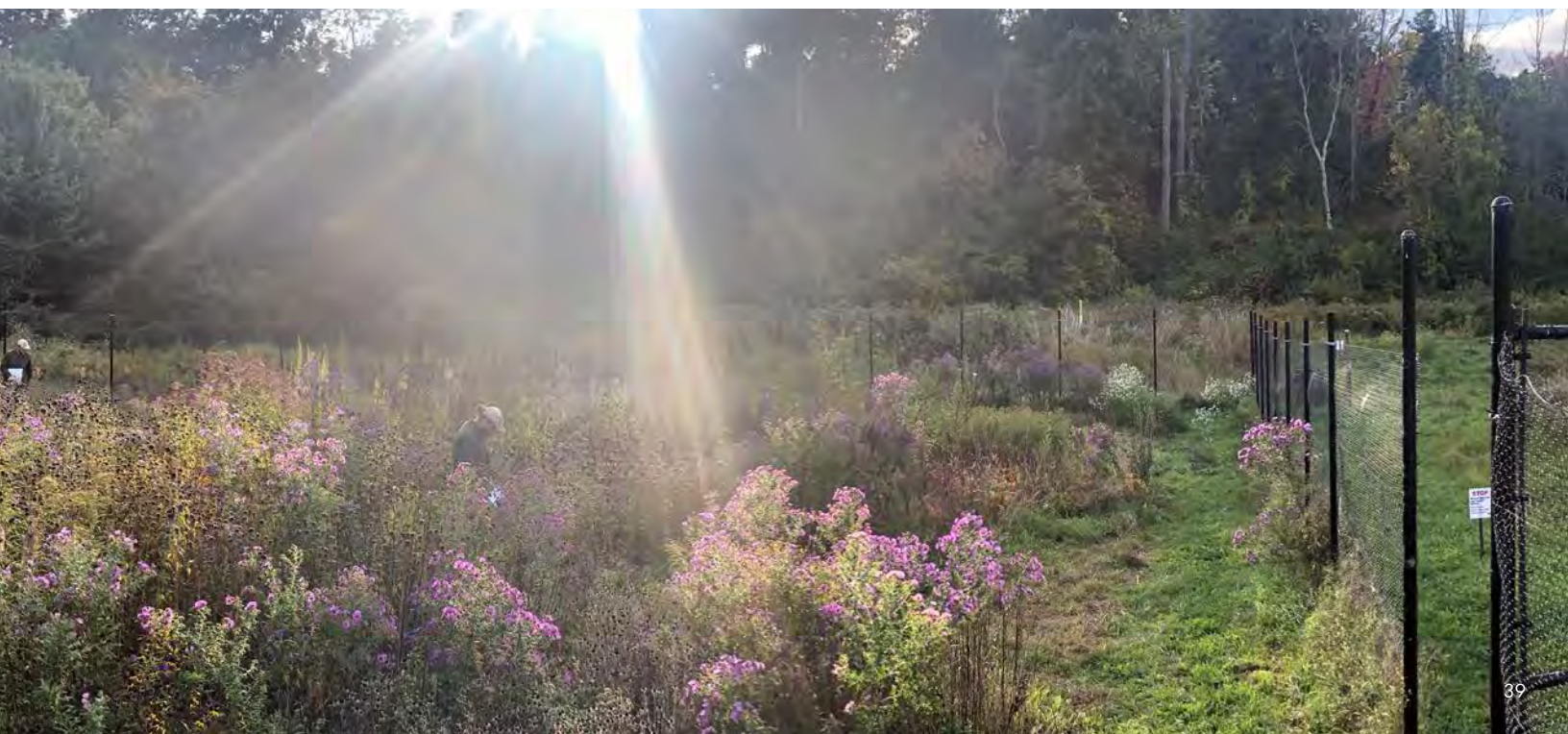
Paths within the meadow and shrub areas are not clearly defined or do not exist, and in order to access the shrubs visitors have to exit the meadow through the gate on the opposite side and walk around the fence. No seating or shade areas exist at the site, nor is there a gathering space for workshops.

After a number of site visits and conversations between designer Evan Abramson and LLCT staff, it was determined that a small gathering space should be added, with a slanted roof to allow for rainwater catchment. The fence will be reduced to a 2' height to deter dogs, with winding paths and gates connecting



the various areas to each other. Plant species diversity on the site will be vastly widened per Dr. Gegear's recommendations in order to attract and sustain a long list of threatened and at risk species from early spring to late fall. Sitting areas will offer visitors the opportunity to take in the site's abundance and diversity at their own pace.

*Composite panorama of field botanist Adam Kohl at People for Pollinators in 2019. Pollinator-supporting plants well established on the site include *Asclepias incarnata*, *Eutrochium fistulosum*, *Monarda fistulosa*, *Penstemon digitalis*, *Salix lucida*, *S. petiolaris*, *Symphytotrichum novae-angliae*, *Vaccinium corymbosum* and *Zizia aurea*. Opposite: sign at site entrance. Photographs by Evan Abramson.*





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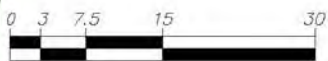
PEOPLE FOR POLLINATORS

LANDSCAPE | INTERACTIONS

16 Center Street #426

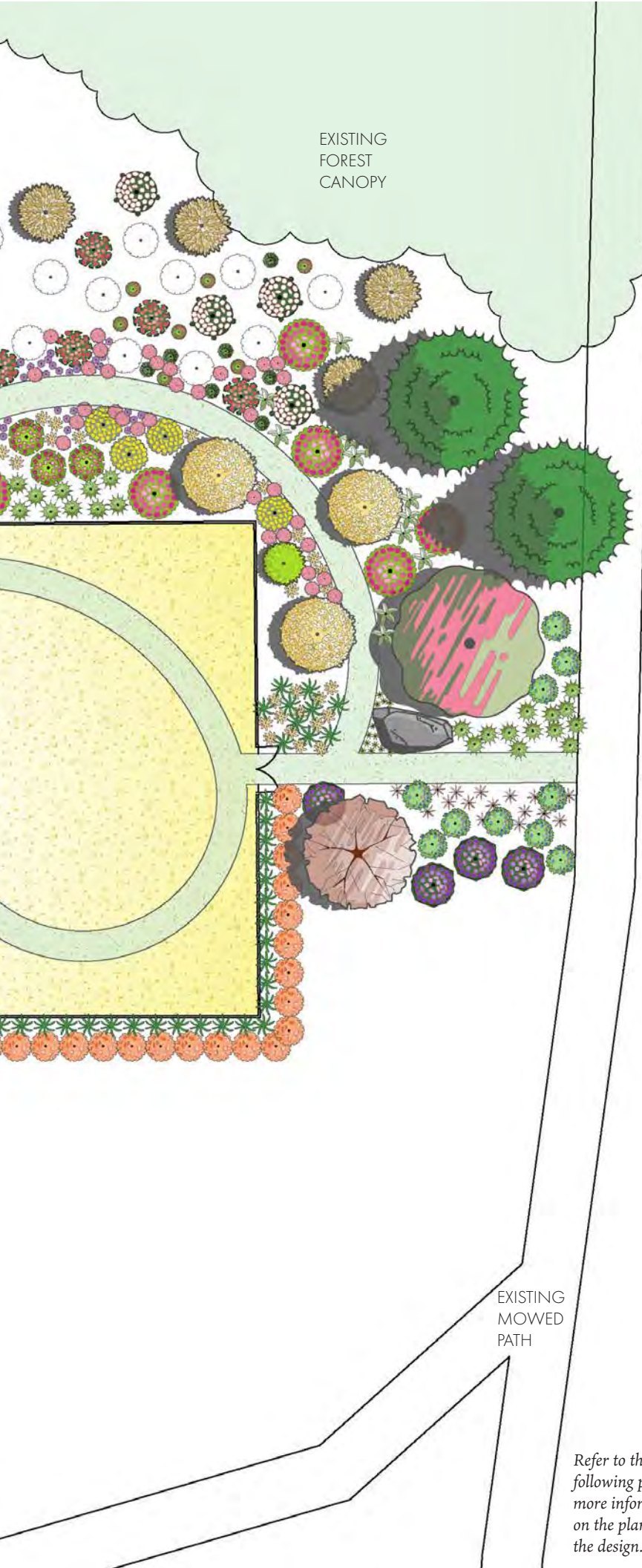
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# SITE CONDITIONS

MEDIUM TO MOIST SOILS  
 FULL SUN TO PART-SHADE  
 MODERATE FOOT TRAFFIC  
 FORMER HAY FIELD








## PLANT SCHEDULE

TREES	BOTANICAL NAME	COMMON NAME	QTY	REMARKS
	<i>Cercis canadensis</i>	Eastern Redbud	2	20' wide spacing
	<i>Chamaecyparis thyoides</i>	Atlantic White Cedar	2	20' wide spacing
	<i>Quercus ilicifolia</i>	Scrub Oak	3	15' wide spacing
	<i>Salix discolor</i>	Pussy Willow	5	8' wide spacing
	<i>Salix humilis</i>	Prairie Willow	10	6' wide spacing
	<i>Salix lucida</i>	Shining Willow	5	10' wide spacing
	<i>Salix petiolaris</i>	Meadow Willow	10	10' wide spacing
SHRUBS	BOTANICAL NAME	COMMON NAME	QTY	REMARKS
	<i>Cephalanthus occidentalis</i>	Buttonbush	4	6' wide spacing
	<i>Diervilla lonicera</i>	Northern Bush-honeysuckle	36	4' wide spacing
	<i>Hypericum prolificum</i>	Shrubby St. John's-wort	10	5' wide spacing
	<i>Rosa carolina</i>	Carolina Rose	7	4' wide spacing
	<i>Rosa palustris</i>	Swamp Rose	5	5' wide spacing
	<i>Rosa virginiana</i>	Virginia Rose	9	5' wide spacing
	<i>Rubus odoratus</i>	Purple-flowering Raspberry	8	7' wide spacing
	<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry	4	6' wide spacing
	<i>Rubus vermontanus</i>	Vermont Blackberry	10	4' wide spacing
	<i>Spiraea alba</i>	Meadowsweet	10	3' wide spacing
	<i>Spiraea tomentosa</i>	Steeplebush	10	3' wide spacing
	<i>Vaccinium macrocarpon</i>	American Cranberry	7	2' wide spacing
	<i>Vaccinium oxycoccos</i>	Small Cranberry	7	2' wide spacing
	<i>Vaccinium pallidum</i>	Hillside Blueberry	30	2' wide spacing
GRASSES	BOTANICAL NAME	COMMON NAME	QTY	REMARKS
	<i>Andropogon gerardii</i>	Big Bluestem	75	3' wide spacing
	<i>Carex pensylvanica</i>	Pennsylvania Sedge	125	1' wide spacing
	<i>Chasmanthium latifolium</i>	River Oats	40	2' wide spacing
	<i>Panicum virgatum</i>	Switchgrass	70	3' wide spacing
	<i>Schizachyrium scoparium</i>	Little Bluestem	100	2' wide spacing
PERENNIALS	BOTANICAL NAME	COMMON NAME	QTY	REMARKS
	<i>Cirsium pumilum</i>	Pasture Thistle	50	1' wide spacing
	<i>Eutrochium dubium</i>	Coastal Plain Joe-Pye Weed	36	2' wide spacing
	<i>Hypericum ascyron</i>	Giant St. John's-wort	26	2' wide spacing
	<i>Pedicularis canadensis</i>	Canadian Wood Betony	80	1' wide spacing
	<i>Prunella vulgaris</i>	Selfheal	116	1' wide spacing
	<i>Rumex altissimus</i>	Pale Dock	12	2' wide spacing
	<i>Viola pedata</i>	Bird's-foot Violet	40	.5' wide spacing
GROUND COVERS	BOTANICAL NAME	COMMON NAME	QTY	REMARKS
	Dry Mix	Upland Meadow Seed Mix	8,714 sf	Seed 35% of total area

EXISTING  
 MOWED  
 PATH

Refer to the following page for more information on the plants in the design.

KEY TO DESIGN AREAS

				
full sun, medium soil	full sun, moist soil	full sun, moist to medium soil	full sun to part-shade, medium soil	part-shade, medium soil

# PLANT SCHEDULE































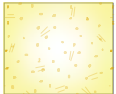
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## MANAGEMENT GUIDELINES

### SITE ESTABLISHMENT

As previously mentioned, significant portions of the People for Pollinators site had been direct seeded and planted as far back as 2016. Because of this, only about 35% of the fenced in area requires seeding, due in large part to the presence of non-native grasses and weeds. A custom seed mix has been created for the site (see opposite page) and LLCT staff and volunteers will remove the undesired vegetation.

To create the Beecology research garden, LLCT staff rented a push behind sod cutter and, after mowing as low as possible, cut 1-2" deep, removing the well established turf grasses from the site. Some areas were also smothered using black landscape fabric (refer to photographs on opposite page).

If smothering, black plastic or tarp must be well secured on all sides using ground staples, cinder blocks, large rocks or other weighted objects, so that the material does not flap over in the wind. It should be left in place for an entire growing season (May to September) in order to kill off unwanted vegetation.

Direct seeding is best suited for the late fall or early winter, as many, if not most of the native forbs, shrubs and graminoids selected require at least 30-60 days of cold stratification in order to germinate. An additional benefit of fall seeding is that watering is not required. When hand seeding small areas, it is recommended to mix the seeds with a medium such as sand or sawdust (use 4:1 ratio of medium

to seeds) in order to help distribute the seeds more evenly and to provide some cover without burying the seeds too deeply. For seeding larger areas, refer to the Old Field Toolkit on the following pages.

Shrubs, plugs and other plants can be installed at any time during the growing season, but it is recommended to plant either in the early spring or the fall, in order to avoid plants drying out. Late spring or mid summer plantings should be avoided unless adequate watering systems or schedules are in place.

Mulching around new plantings can help suppress weeds and retain moisture. If mulching, use natural, dye-free materials such as shredded leaves, wood chips or straw and leave 2" of bare soil around the crown of the plant. To the extent possible, only mulch around new plantings. Ground nesting bees, which constitute approximately 70% of native bee species in the Northeast, require bare, exposed areas of soil to excavate their nests, which are often found at the base of bunching grasses. Landscaping which includes total coverage of areas in between plants with mulch prevents ground nesting bees from finding suitable nesting locations.

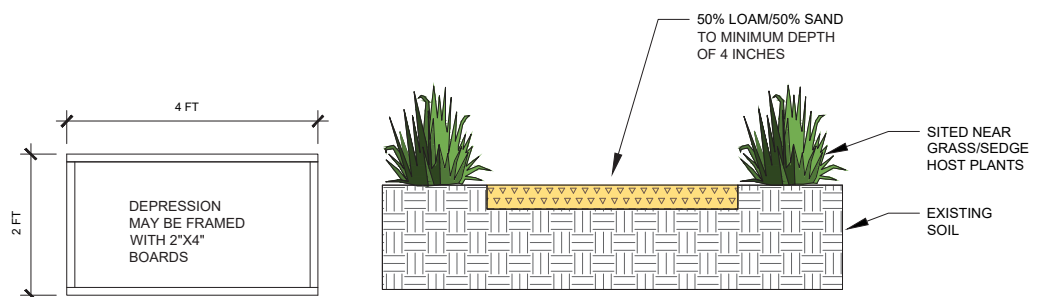
For additional information regarding landscape practices to support native pollinators, refer to the **Best Management Practices** section of this report.

### MOWING REGIMES

For meadow areas which have been recently seeded,

### BEE NESTING STRIP DETAIL

Ground nesting bee habitat can be created by creating a 2'x4' or larger area and removing all vegetation and at least 4 inches of soil. 50% of the soil can be added back in mixed with 50% sand. The area should be well draining, in full sun and kept clear of weeds, grasses or other vegetation. Do not mulch.



## PEOPLE FOR POLLINATORS MEADOW SEED MIX

it is generally recommended to keep all new vegetation in these areas at a height of 8-12 inches consistently, for the first 1-2 growing seasons. When the average height of plants in these newly seeded areas reaches approximately 12 inches, all vegetation in these areas should be cut back to no less than 8 inches. This practice should continue through the entire first growing season, and possibly the second. During the second or third growing season, vegetation should be assessed as to whether it is comprised predominantly of the species that were seeded. If it is, and if turf grass and invasive species pressure is low, the 8-12 inch mowing schedule can be replaced by selective hand pulling (on a small scale) or by a once-a-year weed whack or brush hog (on a large scale). If weed whacking or brush hogging, vegetation should be cut no lower than 4-6 inches, and always during the dormant season after plants have gone to seed. Ideally, the area would be divided into 2 or 3 sections. One section would be cut per year on a rotational basis for the life of the project, in either early spring (before April 1) or late fall (after November 15).

Shrubs		% Count	% Weight
<i>Spiraea alba</i>	Meadowsweet	4.05	0.83
<i>Spiraea tomentosa</i>	Steeplebush	4.05	0.83
Forbs			
<i>Agastache scrophulariifolia</i>	Purple giant hyssop	2.51	1.67
<i>Asclepias incarnata</i>	Swamp milkweed	0.61	7.83
<i>Asclepias syriaca</i>	Common milkweed	0.11	1.67
<i>Asclepias tuberosa</i>	Butterfly weed	0.23	3.34
<i>Baptisia tinctoria</i>	Yellow wild indigo	0.20	2.51
<i>Cirsium discolor</i>	Field thistle	0.17	1.67
<i>Doellingeria umbellata</i>	Tall white aster	1.81	1.67
<i>Eutrochium fistulosum</i>	Hollow Joe-Pye weed	0.99	0.78
<i>Eutrochium maculatum</i>	Spotted Joe-Pye weed	1.20	0.78
<i>Eutrochium purpureum</i>	Purple Joe-Pye weed	1.70	2.51
<i>Geranium maculatum</i>	Spotted crane's-bill	0.20	2.51
<i>Hypericum punctatum</i>	Spotted St. John's-wort	7.82	0.83
<i>Hypericum pyramidatum</i>	Great St. John's-wort	5.12	1.67
<i>Impatiens capensis</i>	Spotted touch-me-not	0.22	3.34
<i>Lupinus perennis</i>	Wild lupine	0.07	4.18
<i>Mimulus ringens</i>	Allegheny monkey flower	29.12	0.78
<i>Monarda punctata</i>	Spotted bee balm	3.42	2.35
<i>Pedicularis canadensis</i>	Canadian lousewort	1.25	2.35
<i>Penstemon hirsutus</i>	Northeastern beardtongue	6.70	1.67
<i>Solidago juncea</i>	Early goldenrod	7.83	1.67
<i>Solidago odora</i>	Sweet goldenrod	3.37	0.83
<i>Solidago speciosa</i>	Showy goldenrod	2.41	1.57
<i>Zizia aptera</i>	Heart-leaf golden Alexanders	0.49	2.51
<i>Zizia aurea</i>	Golden Alexanders	0.45	2.51
Graminoids			
<i>Andropogon gerardii</i>	Big bluestem	0.14	0.83
<i>Carex brevior</i>	Plains oval sedge	3.67	7.83
<i>Carex molesta</i>	Field oval sedge	3.17	7.83
<i>Panicum virgatum</i>	Switchgrass	0.19	0.83
<i>Schizachyrium scoparium</i>	Little bluestem	6.75	27.83

Portions of the People for Pollinators site were prepared for planting by smothering with black plastic (left) and sod cutting (right) in 2020. Photographs by Bryn Gingrich.

