Bring Conservation Home
Site Visit Report

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22 August 2023

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Thank you for taking the time to walk and talk with us to discuss increasing the biodiversity of your yard. We are excited by your energy and interest in naturescaping. We hope this report will help in your endeavor to enhance your yard for the benefit of the ecosystem. Please let us know if you have any questions or comments. This report contains links (in blue text) to various resources and specific plant profiles, which you may find helpful.

I. NON-NATIVE INVASIVE PLANTS

Native plants struggle to compete with non-native invasives for light, nutrients, and moisture. Most of these plants were brought to the U.S. deliberately for ornamental value, erosion control, or other good intentions. Unfortunately, their spread was not impeded by insects and diseases that control them in their native country. Without intentional control, non-native invasives continue to spread, wreaking havoc on native landscapes.

Non-native plants do not support the reproduction of butterflies and moths or the birds that depend upon their caterpillars for food. Native Missouri songbirds need insect protein, most frequently caterpillars, to feed their young.

No native plants = no insects/butterflies/moths = no songbirds

With landscapes full of non-native and invasive plants that do not provide nourishment, the insects have retreated to the countryside, forcing many of our native songbirds to do the same. We are depleting their food sources when landscaping with non-native plants. We strongly recommend visiting HOMEGROWN NATIONAL PARK[1] by Doug Tallamy for a full description of

[1] "HOMEGROWN NATIONAL PARK." https://homegrownnationalpark.org/. Accessed 28 Jul. 2021.

these interactions.

We found the following invasive plants in your landscape during our visit:

Bush Honeysuckle (Lonicera maackii)

Small seedlings around property.

Bush honeysuckle[2] is one of our most pervasive non-native invasive plants in the region. Where allowed to thrive, it crowds out nearly every other native plant. Its early green-up prevents almost anything native from growing beneath it, often leading to bare dirt and erosion issues. The same behavior also prevents native trees from re-sprouting, eventually leading to the decline of our forests and woodlands. While birds eat bush honeysuckle fruit in the fall, the nutritional content is not helpful, being nearly all carbohydrates when the animals need fat for fall migration or to prepare for winter. There is even evidence that tick-borne diseases which affect humans are more prevalent where bush honeysuckle is dense, due in part to the dense shelter it provides white-tailed deer.

For small numbers of bush honeysuckle, consider chemical-free options like digging the plant out or cutting it at ground level, watching for re-sprouts and cutting again. This approach forces a plant to draw on the food reserves in its roots and eventually starves it, killing it in place. To be effective, the cutting of the re-growth must be frequent enough to prevent leaf-out and recharging of the roots. You might also be interested in a technique called “root docking” whereby the roots are cut away from the root collar. See this primer video for more information on this method.[3]

English Ivy (Hedera helix)

Near the AC Unit on the north side of the house; likely other small plants around property.

As aggressive as English Ivy[4] can be growing horizontally as a groundcover, it cannot reproduce unless it climbs a vertical surface like a fence or tree. Once it reaches a sufficient height and flowers and fruits, birds will eat those fruits, fly away, and deposit them to parks, common grounds or other yards.

For small areas of English Ivy, consider simply pulling the plants up by their roots. They have an extensive, but rather shallow root system. The work is made easier when the soil is moist after a soaking rain. Monitoring in future seasons will be required as some root pieces may re-sprout.

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[2] "Bush Honeysuckles | Missouri Department of Conservation." https://mdc.mo.gov/discover-nature/field-guide/bush-honeysuckles. Accessed 25 Aug. 2021.
[3] "Root Docking Invasive Bush Honeysuckle - YouTube." 5 Mar. 2018, https://www.youtube.com/watch?v=UBSMtgpo72E. Accessed 2 Nov. 2022.
[4] "English Ivy Control | Home & Garden Information Center." 20 Aug. 2021, https://hgic.clemson.edu/factsheet/english-ivy-control/. Accessed 25 Aug. 2021.

Japanese Honeysuckle (Lonicera japonica)

Along back fence.

Many woody vines like Japanese Honeysuckle[5] have significant tap roots and can be very difficult to remove mechanically, especially more mature plants. For just a few plants, you might try repeatedly cutting to try to starve the plant, but keep in mind a vine may have stems and leaves that you don't see or have access to, making the exercise somewhat futile. Unfortunately, herbicide is often required to kill these plants.

Sweet Autumn Clematis (Clematis terniflora)

Along fencing and growing within turf (large vines on neighbor's property).

Sweet Autumn Clematis[6] is very aggressive and we encourage its removal. There are parks and roadsides around town in early fall where white "blankets" of the clematis cover the underlying woody vegetation. This plant is notoriously difficult to clear from a landscape once established as it cannot be pulled up by the roots. We recommend cutting it to ground, letting it re-sprout and spraying the new leaves with herbicide. The key is to spray them before the leaves develop their thick, waxy cuticle. Some plants may die back and still re-sprout, but generally, we have seen success with this approach. See the linked reference for additional details.

Tree of Heaven (Ailanthus altissima)

Small seedlings found around property.

Tree of Heaven[7], aka "Stink Tree" is an incredibly fast growing tree reaching up to 70 feet and spreading prolifically by seed. While pushing out native species, it produces a chemical compound, ailanthone, that inhibits the growth of other nearby plants.

For small numbers of Tree of Heaven, consider chemical-free options like digging the plant out or cutting it at ground level, watching for re-sprouts and cutting again. This approach forces a plant to draw on the food reserves in its roots and eventually starves it, killing it in place. To be effective, the cutting of the re-growth must be frequent enough to prevent leaf-out and recharging of the roots.

Wintercreeper (Euonymus fortunei)

Along back area of backyard, as ground cover and growing up fence.

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[5] "Japanese Honeysuckle | Missouri Department of Conservation." https://mdc.mo.gov/discover-nature/field-guide/japanese-honeysuckle. Accessed 25 Aug. 2021.
[6] "Clematis terniflora - UFDC Image Array 2 - University of Florida." https://ufdcimages.uflib.ufl.edu/IR/00/00/41/84/00001/AG31500.pdf. Accessed 25 Aug. 2021.
[7] "Tree of Heaven (Ailanthus altissima) - Invasive.Org." https://www.invasive.org/alien/pubs/midatlantic/aial.htm. Accessed 9 Nov. 2021.

As aggressive as Wintercreeper[8] can be growing horizontally as a groundcover, it cannot reproduce unless it climbs a vertical surface like a fence or tree. Once it reaches a sufficient height and flowers and fruits, birds will eat those fruits, fly away, and deposit the seeds in parks, common grounds or other yards. We urge you to at least clear any vertically growing portions to reduce their spread beyond your landscape.

For small areas of Wintercreeper, consider simply pulling the plants up by their roots. They have an extensive, but rather shallow root system. The work is made easier when the soil is moist after a soaking rain. Monitoring in future seasons will be required as some root pieces may re-sprout.

Even large areas of Wintercreeper can be addressed without chemicals by pulling the plants up by their roots. It may take several seasons, and you might work in specific sections to help ensure you can see your progress.

For large vertically growing plants on trees, you do not need to remove the growth from the tree. Simply cut 1-2 foot sections from each vine close to the ground and apply a concentrated herbicide on the cut surface of the rooted piece. The portion left in the tree will die and slowly decay, eventually falling off.

To clear large vertically growing plants on a fence, simply cut 1 foot sections from each vine close to the ground and apply a concentrated herbicide on the cut surface of the rooted piece.

More information:

For additional details on the ecology and steps to clear away these plants, see the linked references. Please follow the detailed instructions in the reference and follow all safety precautions.

Other Problem Plants

White Mulberry (Morus alba)

Growing in the center of the backyard.

White Mulberry poses an ecological threat by displacing native species, possibly hybridizing with and transmitting a root disease to the native *Red Mulberry (Morus rubra)*. It can also be easily mistaken for *Red Mulberry.* See reference for identification. White mulberry seedlings may be controlled by pulling or digging the plant out. Consult the link above to learn about the plant's ecology.

[8] "Wintercreeper | Missouri Department of Conservation." https://mdc.mo.gov/discover-nature/field-guide/wintercreeper. Accessed 25 Aug. 2021.

Possible Native Red Mulberry

We mentioned that the native ***Red Mulberry (Morus rubra)*** has become quite rare. We observed a mature tree near the center of the back fenceline (see left) that we believe could very well be one of these rare specimens. We didn't mention it during the site visit because they can be difficult to positively identify, but took some photos for closer examination later. Upon closer inspection, the leaf shape is highly consistent with Red Mulberry. A skilled arborist will be able to offer a more positive identification. You can also keep an eye out for fruit during the next growing season. Red Mulberry fruit are longer (about an inch) and solitary whereas the white mulberry fruit is smaller and comes in clusters. Linked here is a helpful guide to help with identification.

II. NATURESCAPING

Clearing the Space

It is typically necessary to clear existing vegetation to make space for new native plantings where a garden bed does not already exist. There are three main ways to kill existing grass/weed vegetation: sheet mulching, solarization, and systemic broad-spectrum herbicide. Each method has its advantages and disadvantages, but we find that for most residential landscapes, sheet mulching is the preferred approach. The size and shape of this planting is entirely up to you. There is no minimum or maximum size for such a space.

- **Sheet Mulching:** For areas with tall weeds, this is best achieved by cutting or knocking down the vegetation as close to the ground as possible. A string trimmer works well for this task. Sheet mulch with a layer of cardboard/newspaper topped with several inches of mulch/compost to starve the existing plants. You can then clear away a portion of the mulch and cut a hole in the cardboard where you want to plant. The cardboard will decompose generally within one growing season. For more details, including a step-by-step video, check this out: How To Sheet Mulch
    - If planting by seed, leaving the sheet mulch in place for a growing season is recommended to help achieve better clearing of the current grass/weed layer. Then remove the mulch and any non-decomposed paper/cardboard to reveal the soil beneath before sowing.
- **Solarization** is most effective for sunny areas. For best results, use two layers of clear plastic pinned down across the space you wish to clear for 4 to 6 weeks. This uses the sun's heat to cook the vegetation and will also kill seeds in the soil to a depth of 4-6 inches. A relatively inexpensive approach, it is highly effective on live plants as well as weed seeds and diseases. A more detailed description of the solarization method is linked here.
- **Systemic herbicides** may not be a first choice but might be a more practical option for clearing severe infestations of certain invasive plants. It is highly effective at killing all vegetation while leaving a very small residual risk of contaminating adjacent areas. The chemicals disintegrate into biologically inert components in a very short period – generally within 3-5 days. However, the treated plants often take a week or two to show damage. Occasionally a few plants might have sufficient herbicide resistance to require a second application. Using a herbicide to kill existing vegetation will likely require 2-3 applications as new seeds germinate on the newly exposed soil.

Basic Design Tips

One of the best ways to decide what arrangements you would like to try is to see examples. The Shaw Nature Reserve's Whitmire Wildflower Garden in Gray Summit is one of the largest and

most diverse native gardens in the region. We recommend visits throughout the year to see the seasonal variations. Closer to St. Louis, excellent examples also exist at Brightside St. Louis Demonstration Garden and Powder Valley Conservation Nature Center in Kirkwood. We also recommend taking inspiration from the native landscape plans available on the Grow Native website[9].

For more visible spaces, you might consider these tips that create a more traditional/designed look:

- Plant groups of the same plant species. Odd numbers of plants look best.
- Plant shorter plants in a visible pattern to create a more "tidy" appearance.
- Include grasses and shrubs to add structure or provide a backdrop to flowering plants.
- Place large stones strategically between the plantings, define borders, and create pathways to emphasize the look of a "designed" garden.

What are Cultivars, and Why Avoid Them?

Cultivars, sometimes called "nativars", are variations of a species, most of which are bred to produce different colors, fancier petal structures, etc., to appeal to human ideas of beauty or novelty. Unfortunately, many cultivars have lost what makes them valuable to pollinators and other wildlife. For example, the Annabelle hydrangea, *Hydrangea arborescens* 'Annabelle', is a popular cultivar of the Wild Hydrangea, *Hydrangea arborescens*. Although the Annabelle flowers are beautiful, they are almost entirely sterile, having neither pollen nor nectar and tend to bow over under the weight of their heavy blossoms, creating the need to remove or stake their stems. If you observe an Annabelle shrub, you will not see bees around it. On the other hand, the more delicate blossoms of the native species will have lots of bees which will linger a while, looking drunkenly happy as they collect nourishment.

How can you tell a cultivar from a native plant? "Grow Native" tags used by many growers and nurseries to identify native plants will save you the need for detective work. Where such tags are not in use, an additional name in quotes after the botanical name (such as the 'Annabelle' just mentioned) indicates a cultivar, not a native plant. After the native species of Purple Coneflower, *Echinacea purpurea*, which is extraordinarily valuable to birds and many pollinators, the Missouri Botanical Garden lists no fewer than 57 cultivars of *Echinacea purpurea* with intriguing extra names like 'Fatal Attraction,' 'Flame Thrower,' or 'Pink Poodle.' Many of these cultivars will have little ecological value, so it is always best to choose the original native species.

Fortunately, the increasing popularity of native plants in our region means that local nurseries

[9] "Native Landscape Plans." https://grownative.org/learn/native-landscape-plans/. Accessed 6 Jul. 2023.

and garden centers are keeping more and more native plants in stock. Additional resources for finding purely native species are listed later in this report. For more information, check out this program: Grow Native! Webinar: Natives, Cultivars, and "Nativars"[10].

Plant Identification

Among your main tasks currently is to identify what you have growing in various locations to help you decide what to keep and what to clear out. There is a page on the new STL Naturescaping Info Hub linked here that could help provide some tips and tools on identifying plants in Misssouri.

PLANT RECOMMENDATIONS

We discussed some opportunities around your landscape for the establishment of native habitat for bird and butterfly food/cover and your enjoyment. When suggesting plants for your landscape, we have provided a short list of those best suited for specific areas. Each area will likely not accommodate the full plant list, allowing you to choose those you prefer based on color, etc. Do keep in mind that diversity makes a healthy natural community.

NORTH SIDE YARD

There is a small bed between the driveway and your home that you would like to augment with native wildflowers. We recommend smaller (shorter) wildflowers near the AC unit; these would also work well around the yews. Those plants with a maximum height of 1 foot are marked with an asterisk (*).

Spring flowering:

Bishop's Cap (Mitella diphylla)* – The foliage resembles *Heuchera*; works well under trees. It is slow to get established and can be hard to get started. Its flowers grow on a stalk, so best to plant at the garden edge where one can get close to observe. Attracts small bees and other small insects.

Blue-eyed Mary (Collinsia verna) – A pretty annual with blue and white flowers that provides food for early pollinators; will self-seed. Best massed.

Coral Bells (Heuchera richardsonii)

***Jacob's Ladder (Polemonium reptans)* –** with attractive foliage and light blue flowers in late spring.

Large Bellflower (Uvularia grandiflora)

[10] "Grow Native! Webinar: Natives, Cultivars, and "Nativars" - YouTube." 2 Dec. 2021, https://www.youtube.com/watch?v=PBy5F7yHjks. Accessed 6 Jul. 2023.

Rue Anemone (Thalictrum thalictroides)*

Sharp-Lobed Hepatica (Hepatica acutiloba)*

Solomon's Plume (Maianthemum racemosum)

Wild Geranium (Geranium maculatum) – Iridescent leaves have refractive cells so that they can catch the slivers of sunlight reaching the forest floor. In the spring, watch the bees fly below the leaves and disappear as they retrieve nectar from the ground-level flowers hidden below. **Designated a Plant of Merit by the Missouri Botanical Garden.**

Wild Hyacinth (Camassia scilloides)

Summer flowering:

Harebell (Campanula rotundifolia)

Indian Pink (Spigelia marilandica) – upright flower spikes, with brighter red/yellow colors than Columbine. Shorter/stouter plant.

Spider lily (Tradescantia tharpii)*

Star Tickseed (Coreopsis pubescens) – wide platform flower for butterflies to nectar; the seeds of most coreopsis are sought-after by Goldfinches and a variety of other small birds; this one can bloom from spring to fall!

Virginia Spiderwort (Tradescantia virginiana)

Fall flowering:

Littleflower Alumroot (Heuchera parviflora)

Blue Stem Goldenrod (Solidago caesia)

White Turtlehead (Chelone glabra)

Zigzag Goldenrod (Solidago flexicaulis) – does well in partial shade; an important food source to many types of insects. Keystone genus; host plant to specialist bees. Larval food for the Bilobed Dichomeris butterfly, Brown-hooded Owlet moth, and Twirler moth. Provides late color to the shade garden.

Ground Covers:

Celandine Poppy (Stylophorum diphyllum).

Common Blue Violets (Viola sororia)*

Roundleaf Groundsel (Packera obovata) – an aggressive native that produces 15-inch tall yellow flower spikes in spring – critical for early pollinators – and retains its basal foliage year-round. It does self-seed quite easily, can fill in an area readily, and is a host for the Northern Metalmark butterfly. The flowers last 4 to 6 weeks. Many gardeners then cut the stalks off with clippers or a weed whip, leaving the tight basal foliage. We discussed this as an option near the AC unit as the flower spikes will allow for air flow and the foliage is low to the ground.

Wild Ginger (Asarum canadense)* – Iridescent leaves have refractive cells so that they can catch the slivers of sunlight reaching the forest floor. In the spring, watch the bees fly below the leaves and disappear as they retrieve nectar from the ground-level flowers hidden below. **Designated a Plant of Merit by the Missouri Botanical Garden.**

Shrubs or Shrubby Perennials:

We also discussed including a small shrub or shrubby perennial(*) in this bed. Consider one of these plants.

American Spikenard (Aralia racemosa)* – a shrubby perennial that dies back to the ground each fall but looks like a shrub all summer; clusters of white flowers in late spring yield fruit in summer. **Designated a Plant of Merit by the Missouri Botanical Garden.**

Goatsbeard (Aruncus dioicus)* – a shrubby perennial with feathery creamy/yellow flowers in late spring with dense, compound leaves.

Leatherwood (Dirca palustris) – perhaps the state's slowest growing plant, but its foliage and canopy shape is quite striking; a shrub with a "tree-like" appearance in winter.

Smooth Hydrangea (Hydrangea arborescens)

BACKYARD

Back Courtyard

You have removed portions of the brick hardscape in your back courtyard and planted a number of natives and non-natives. This area has the feel of a cottage garden or herb garden, with tidy plants nestled within the brick pathways.

You already have some nice natives growing and are working to keep the weeds out. We discussed using leaf mulch to help suppress the weeds around the desired plants as they become established. This area is partly sunny.

This space receives a limited amount of afternoon sun, but plenty enough to accommodate these widely adaptable native perennial flowers. We have ordered them by primary blooming season:

Spring flowering:

Alumroot (Heuchera americana)

Foxglove Beardtongue (Penstemon digitalis) – with white, tubular flowers in late spring. This plant does well in light shade. Provides pollen for specialist bees and wasps. Visited by hummingbirds.

Heart-leaved Alexander (Zizia aptea)

Purple Milkweed (Asclepias purpurascens) – with showy purple flowers on stout upright stems, typically 2 to 3 feet tall. Can spread through seed or rhizomes. Host plant for the Monarch butterfly.

Summer flowering:

Clustered mountain mint (Pycnanthemum muticum) – Attractive silvery bracts (leaves) surround its flowers which bloom from summer into fall and attract a multitude of pollinators; does not spread as aggressively as others in the mint family. **Designated a Plant of Merit by the Missouri Botanical Garden.**

Dittany (Cunila origanoides) – With blue to lavender flowers, a great tidy plant that blooms into early fall; attracts pollinators. Used as an herbal tea. May create frost flowers as watery sap is pushed out of the stem in thin icy ribbons.

Downy Skullcap (Scutellaria incana)

Pale Beardtongue (Penstemon pallidus)

Slender Mountain Mint (Pycnanthemum tenuifolium) – It loves sun and delivers a profusion of white flowers in mid-summer for a variety of small pollinators, especially our native bees. It will clump and should not spread aggressively.

Spotted Bee Balm (Monarda punctata)

***White Wild Indigo (Baptisia alba)* –** beautiful architectural plant with columns of white blooms and gray-blue foliage. Plants may take up to four years of development for full display. Difficult to transplant. Mature plants are quite large. Larval host plant for Black-spotted Prominent, Wild Indigo Duskywing, Frosted Elfin, and Hoary Edge butterflies.

Whorled Milkweed (Asclepias verticillata) – tolerates more limited direct sunlight than other milkweed. Remains short and stout and tolerates dry soil.

Wild Stonecrop (Sedum ternatum)

Fall flowering:

Drummond's Aster (Symphyotrichum drummondii) – prefers part shade in hot summer climates like ours. Host to the Pearl Crescent butterfly.

Helen's Flower (Helenium amarum)

Rose Turtlehead (Chelone obliqua) – 2 to 3 feet tall with blue flowers, this native is easily grown in sun to part shade.

Grasses:

You may want to consider a grass to help hide the sewer opening in the middle of your courtyard:

Bottlebrush Grass (Elymus hystrix) – dramatic, open flower/seed arrangements which resemble a bottlebrush at the end of tall stems.

Little Bluestem (Schizachyrium scoparium) – bluish leaves in summer followed by salmon-pink through the entire fall and winter.

Splitbeard Bluestem (Andropogon ternarius)

Back Woodland

You have a number of large established canopy trees around your backyard. The backyard slopes up to the back fence where there is a large shady area that would work well as a woodland. In addition to providing diverse wildlife habitat, a woodland area would also capture more stormwater keeping it away from your home.

We talked about the challenge of replacing the existing non-native invasive plants, primarily wintercreeper, in a systematic way to provide an opportunity for the desirable plants to become established.

For any that you choose to install by seed, December and January are the best times to cast seeds on the landscape. Be sure the seeds make contact with bare soil, which requires killing the existing vegetation. Consider doing so in horizontal strips that run along the slope, not up or down it. This should help minimize erosion while the plants germinate and develop. It also

should help reduce the number of seeds that are lost by rainfall washing them down the slope. A light layer of straw on top of the bare soil and seed application also helps with that concern.

We suggest starting with introducing small native trees, shrubs, and native grasses. The trees and shrubs will provide structure and the grasses will hold the soil and reduce erosion.

Small trees:

Bladdernut (Staphylea trifolia) – Suckering large shrub or small tree for woodland areas.

Carolina Buckthorn (Rhamnus caroliniana)

Eastern Redbud (Cercis Canadensis)

Flowering Dogwood (Cornus florida)

Green Hawthorn (Crataegus viridis) – white flowers in spring; nearly thornless; fruit for a variety of birds.

Hop Tree (Ptelea trifoliata)

Pagoda Dogwood (Cornus alternifolia)

Roughleaf Dogwood (Cornus drummondii)

Serviceberry (Amelanchier arborea) – White flowers in early spring yield edible red berries in mid-summer; genus is host to over 100 species of butterfly and moth caterpillars; attractive fall color.

Shrubs:

To augment the ***Elderberry (Sambucus canadensis)*** already present.

Aromatic Sumac (Rhus aromatica) – Sumacs spread by root sprouts and produce great red fall color. This one has attractive foliage and yields red fruit clusters that ripen in summer for birds.

Arrowwood (Viburnum dentatum).

Black Chokeberry (Aronia melanocarpa) – white spring flowers; blue-black fall fruit edible for birds and humans; attractive fall color.

Blackhaw Viburnum (Viburnum prunifolium) – Designated a Plant of Merit by the Missouri Botanical Garden, can grow to 15 feet. Showy flowers and fruit are attractive to butterflies and birds. Fruit is edible. Can be used as a specimen tree or as a hedge of

shrub border. May require pruning for best performance. Flowers form in summer for the following year. Fruiting improves with multiple plants.

Chokecherry (Prunus virginiana)

Mock Orange (Philadelphus pubescens)

Nannyberry (Viburnum lentago) – This large suckering shrub can grow over 15 feet tall and 10 feet wide. Showy flowers and fruit are attractive to butterflies and birds. Fruit is edible. Performs well in a shrub border or hedge; not as formal as other Viburnum. Flowers form in summer for the following year. Fruiting improves with multiple plants. Deer resistant.

Ninebark (Physocarpus opulifolius)

Roughleaf Dogwood (Cornus drummondii)

Silky Dogwood (Cornus amomum)

Spicebush (Lindera benzoin) – host plant for Spicebush Swallowtail butterfly caterpillar; fall fruit for birds; highly adaptable native; deer-resistant.

Winterberry Holly (Ilex verticillata) – Female plants have red berries which provide important winter fruit for the birds and great color. You would need at least one male to insure pollination and berry production. We think they are quite dramatic especially through the winter after they drop their leaves but retain a profusion of red berries.

Grasses and Sedges:

American Beakgrain (Diarrhena obovata) – a 2 to 3 foot tall, gracefully arching woodland grass that remains a clump grass for its first two years, then spreads.

Bottlebrush Grass (Elymus hystrix)

Canada Wild Rye (Elymus canadensis)

Cedar Sedge (Carex eburnea) – provides a nice softening texture to shady beds. Stays green through winter.

James Sedge (Carex jamesii) – With a height of about 1 foot, this sedge spreads by rhizomes and reseeding. Favoring rich woodlands, larval host to the Eyed Brown butterfly, Appalachian Brown butterfly, sedge grasshoppers, and leaf beetles; seeds provide food to birds.

Oak Sedge (Carex albicans)

River Oats (Chasmanthium latifolium) – flat, segmented seed heads that nod and persist through much of the winter; some birds eat the seeds. Should you allow, will readily self-seed through the corridor.

Virginia Wild Rye (Elymus virginicus)

Spreading ground covers:

Celandine Poppy (Stylophorum diphyllum).

Pussytoes (Antennaria parlinii) – blooms in spring with cream-colored flowers said to resemble cat feet. It will fill in with attractive foliage for the entire growing season and is a host plant to the American Lady butterfly.

Wild Stonecrop (Sedum ternatum) – A native succulent with star-like white flowers in spring and foliage that can stay green in most winters.

Wild Ginger (Asarum canadense)

Spring flowering:

Coral Bells (Heuchera richardsonii)

Goatsbeard (Aruncus dioicus)

Jacob's Ladder (Polemonium reptans)

Solomon's seal (Polygonatum biflorum) – with arching stems and hanging bell-shaped flowers.

Spider Lily (Tradescantia tharpii) – long blooming; purple flowers; typically no higher than 12 inches.

Wild Geranium (Geranium maculatum)

Summer flowering:

Black Cohosh (Actaea racemosa) – A beautiful woodland plant that needs some space. Host to the Appalachian Azure and Spring Azure. At risk due to overharvesting in nature.

Garden Phlox (Phlox paniculata)

Indian Pink (Spigelia marilandica)

Late Figwort (Scrophularia marilandica)

Woodland Spiderwort (Tradescantia ernestiana) or ***Zigzag Spiderwort (Tradescantia subaspera)* –** The spiderwort is actually considered a spring bloomer, but after a summer dormant period, it will typically flower again in the fall.

Purple Daisy (Symphyotrichum patens)

Fall flowering:

Downy Skullcap (Scutellaria incana) – 2 to 3 feet tall with blue flowers, this native is easily grown in sun to part shade.

Large-leaved Aster (Eurybia macrophylla)

Littleflower Alumroot (Heuchera parviflora) – with small white to pale pink blooms; at about 1 foot tall, this plant looks good at the front of a mixed border.

Rose Turtlehead (Chelone obliqua)

Zigzag Goldenrod (Solidago flexicaulis) – does well in partial shade; an important food source to many types of insects. Keystone genus; host plant to specialist bees. Larval food for the Bilobed Dichomeris butterfly, Brown-hooded Owlet moth, and Twirler moth. Provides late color to the shade garden.

Part Shade Bioswale or Rain Garden

We discussed the natural swale across the lower portion of your backyard that currently directs water toward the driveway. This drainageway could be enlarged as a bioswale, replacing the lawn with plants that can tolerate substantial moisture. This would help to slow down, absorb, and filter stormwater that flows through your yard. One technique to create this type of feature is to dig out soil on the upstream side of the swale using that soil to create a downstream berm that would help contain and direct water away from your home. This approach could be further expanded to create a large rain garden feature, capitalizing on the stormwater flowing down and across the yard. Note: a ten-foot separation from the house to a bioswale or rain garden feature is recommended. You may want to pursue a grant for this work (see below).

A bioswale, essentially a vegetated ditch that directs water, can be planted with a simple installation of a few species of deep-rooted native sedges or grasses. Sedges are grass-like, resemble liriope, and include ***Globe*** or ***Palm Sedge (Carex grayi* or *Carex muskingumensis)***. Sedges are also host plants for some Skipper butterflies. ***River Oats (Chasmanthium latifolium)*** or ***Soft Rush (Juncus effusus)*** could also be considered. River Oats is the tallest of these plants, but the only true grass. Also, it delivers flat, segmented seed heads that nod and persist through much of the winter; some birds eat the seeds.

Rain Garden Plants for Sun to Part Shade

We like these adaptable plants that should do just fine in almost any part of your rain garden:

Spring flowering:

Copper Iris (Iris fulva)

Eastern or ***Shining Blue Star (Amsonia tabernaemontana*** or ***Amsonia illustris)***

Golden Alexander (Zizia aurea)

Meadow Anemone (Anemone canadensis)

Purple Rocket (Iodanthus pinnatifidus)

Foxglove Beardtongue (Penstemon digitalis)

Summer flowering:

Cardinal Flower (Lobelia cardinalis)

Culver's Root (Veronicastrum virginicum)

Garden Phlox (Phlox paniculata)

Hollow Joe Pye Weed (Eutrochium fistulosum)

Marsh Blue Violet (Viola cucullata)

Marsh Milkweed (Asclepias incarnata)

Meadow Rue (Thalictrum dasycarpum)

Michigan Lily (Lilium michiganense)

Showy Coneflower (Rudbeckia fulgida)

Fall flowering:

Mist Flower (Conoclinium coelestinum)

Rose Turtlehead (Chelone obliqua)

White Turtlehead (Chelone glabra)

Fern:

Sensitive Fern (Onoclea sensibilis)

FRONT YARD

You have established a small wildflower bed next to the house that receives water from the downspout in the southeast corner of the house. We discussed conveying this water further from the house to create a sunny rain garden in the front yard. This conveyance may be most easily accomplished with underground piping since your side yard is fairly narrow, or with a bioswale perhaps with the cooperation of your neighbor. The yard already slopes gently from the house toward the front yard and the street.

Rain Garden

We like these wildflowers for a sunny rain garden area.

Spring flowering:

Copper Iris (Iris fulva) – excellent hummingbird plant for the wettest areas

Eastern Blue Star (Amsonia tabernaemontana) – place on the edge of the rain garden; VERY attractive; hummingbird nectar in spring. **Designated a Plant of Merit by the Missouri Botanical Garden.**

Foxglove Beardtongue (Penstemon digitalis) – white, tubular flowers in late spring; benefits bees and hummingbirds.

Shining Blue Star (Amsonia illustris)

Summer flowering:

Blue Vervain (Verbena hastata) – needs to be a rear placement plant at 2 to 6 feet tall. Short-lived but will self-seed in ideal conditions.

Cardinal Flower (Lobelia cardinalis)

Culver's Root (Veronicastrum virginicum) – spikes of tiny white flowers for bees and small butterflies. Can reach heights above 5 feet with a 4-foot spread. Cut back to reduce sprawl and encourage reblooming in late summer or fall.

Halberdleaf Rose Mallow (Hibiscus laevis)

Prairie Blazing Star (Liatris pycnostachya) – tall, attractive, sun-loving prairie plant. Easy to grow but may flop without adequate sun and moisture.

Showy Coneflower (Rudbeckia fulgida).

Fall flowering:

Blue Lobelia (Lobelia siphilitica)

Rose Turtlehead (Chelone obliqua)

Spiked Blazing Star (Liatris spicata) – This late-season liatris blooms after other blazing stars are finished. Can grow to 6 feet in ideal conditions. Benefits from moist conditions.

Sedges:

We also suggest including one or more of our sedges to use as ground covers to occupy soil surface in the basin and on the berms and to minimize the encroachment of unwanted volunteer plants. For this, we like ***Brown Fox Sedge (Carex vulpinoidea), Yellow-Fruited Sedge (Carex annectens), Globe Sedge (Carex grayi),*** or ***Palm Sedge (Carex muskingumensis).***

The Native Plants for Your Landscape booklet from MDC includes a section on rain gardens that you can use to help with design layout.

III. WILDLIFE STEWARDSHIP

Bird Nest Box

An artificial nest box provides supplemental nest opportunities for the birds while giving you and your family a chance to see them up close. Local bird supply stores are good resources for manufactured birdhouses, many of 100% recycled materials. However, be clear about which species you are interested in. *Quality houses are built to accommodate different birds.*

For small birds such as wrens, be aware of encroachment by English House Sparrows. They are aggressive and will take over most nest boxes that are available. To help prevent this, be sure the entrance hole is 1.125 (1 ⅛)inches in diameter and no more. This will allow entrance by smaller native birds such as the Downy Woodpecker, White-breasted Nuthatch, Tufted Titmouse, Carolina Wren, and House Wren but prevent use by English House Sparrows and Starlings. If your existing nest boxes feature entrance holes larger than 1.125 (1 ⅛) inches in diameter, you can purchase metal plates specifically designed to affix over the openings with holes cut to the proper diameter. You may find them at your local garden center, and an online

search will yield a variety of sources.

If you would like to build your own nest boxes, we recommend a couple of resources offered by the Cornell Lab of Ornithology. This article would be a great place to start for a review of best practices for creating a safe and successful birdhouse:

Features of a Good Birdhouse - NestWatch[11]

Visit this page for a thorough listing of nest box plans organized by species: All About Birdhouses - NestWatch[12] where you can find the ideal nest box plans to support the specific bird that you want to attract or perhaps have seen visit your yard.

In addition, a Screech Owl box would be a nice addition to one or more of your large trees. One significant concern with a Screech Owl box is intrusion by squirrels. However, this is somewhat easily avoided with a simple predator guard. Here's a picture and detailed description of the predator guard we would recommend. A Plan for a Noel Predator Guard[13]

Note: This device is designed for use with smaller birds. To use it with the larger screech owl, we would enlarge it and apply it to the outside edge of the front face of the box. However you size/place it, just be sure it is still able to deter climbing animals from the tree while not impacting the flight of the birds.

Bird Bath

Birds seek water to clean their feathers for optimum flight ability as well as to quench their thirst. It can be as simple as a large plant saucer. Learn more here[14].

A pondless bubbler is another option that would work well in your back courtyard area. A bubbler created with natural stone is a relatively easy DIY project, and an irresistible water source for birds and will provide entertainment for your indoor cats. You may wish to hire a licensed electrician to connect a permanent power source for the pump after building the feature. One landowner in Kirkwood with such a bubbler has documented over 100 species of birds in her landscape. These two videos describe the construction of a small one here in St. Louis; the second was filmed after the owners discovered the need for some modifications:

How to Create a Bubbler Water Feature

Bubbler Filter Modification

[11] "Features of a Good Birdhouse - NestWatch - NestWatch." https://nestwatch.org/learn/all-about-birdhouses/features-of-a-good-birdhouse/. Accessed 28 Jul. 2021.
[12] "All About Birdhouses - NestWatch - NestWatch." https://nestwatch.org/learn/all-about-birdhouses/. Accessed 28 Jul. 2021.
[13] "A Plan for a Noel Predator Guard - NestWatch." https://nestwatch.org/wp-content/uploads/2013/06/guardnoe.pdf. Accessed 28 Jul. 2021.
[14] "Attract Birds With Birdbaths." 20 Apr. 2009, https://www.allaboutbirds.org/news/attract-birds-with-birdbaths/. Accessed 9 Aug. 2022.

We have also included a link for step-by-step instructions and equipment list for such an installation as well as a guide for maintenance.[15]

Native Bee Habitat,

The best way to support native bees is to implement natural stewardship practices. There are three main things you can do in your landscape to support native bees:

1. Maintain perennial stem-nesting bee habitat: How to create habitat for stem-nesting bees.[16]
2. Keep dead wood on site such as logs, stumps, dead branches on live trees or snags for wood-nesting bees.
3. Instead of wood mulch, use leaf mulch or compost which is just as effective but is light enough for ground-nesting bees to pass. Increase Nesting Habitat for Native Bees.[17]

Bee Hotels can do more harm than good *if* not constructed or maintained properly. Here is information on what can go wrong and what to look for in a good bee hotel: The horrors of mass-produced bee houses.[18]

For proper maintenance of bee hotels, refer to this guide from Michigan State University: Building and Managing Bee Hotels for Wild Bees.[19]

IV. STORMWATER MANAGEMENT

Heavy rains can wash insecticides or fertilizers used on lawns into nearby waterways where they do severe damage to aquatic wildlife. Even pet waste contains phosphates and nitrates that contribute significantly to harmful algal growth[20].

Vegetated surfaces help slow down rainwater runoff, encouraging water infiltration and the deposition of dirt and debris carried by rainwater, keeping pollutants out of the stormwater system or local waterways. Adding more native plants and a possible rain garden/bioswale will

[15] "Bubbler Maintenance Guides plus All Water Feature Links 6-27-19." 27 Jun. 2019, https://hummerhavenunltd.com/blog/2019/6/bubbler-maintenance-6-27-19. Accessed 31 Aug. 2021.
[16] "How to create habitat for stem-nesting bees - Z." https://z.umn.edu/stemnestingbees. Accessed 28 Jul. 2021.
[17] "5 Ways to Increase Nesting Habitat for Native Bees | Xerces Society." 17 Mar. 2017, https://www.xerces.org/blog/5-ways-to-increase-nesting-habitat-for-bees. Accessed 28 Jul. 2021.
[18] "The horrors of mass-produced bee houses » Colin Purrington." 17 May. 2019, https://colinpurrington.com/2019/05/horrors-of-mass-produced-bee-houses/. Accessed 28 Jul. 2021.
[19] "Building and Managing Bee Hotels for Wild Bees - Michigan ...." https://pollinators.msu.edu/publications/building-and-managing-bee-hotels-for-wild-bees/. Accessed 28 Jul. 2021.
[20] "Harmful Algal Blooms | US EPA." 7 Feb. 2022, https://www.epa.gov/nutrientpollution/harmful-algal-blooms. Accessed 13 May. 2022.

help to further reduce water runoff from your landscape and improve water quality in your community.

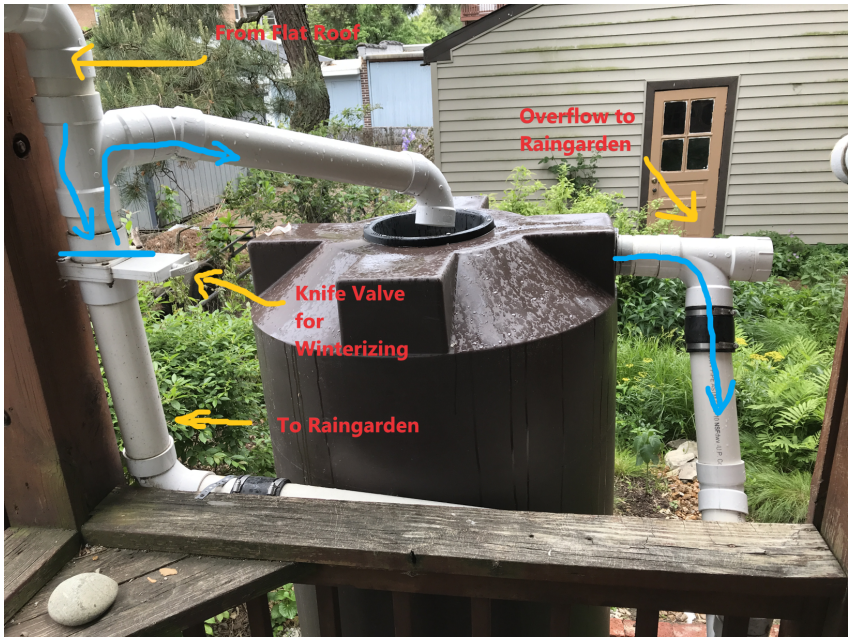
MSD Project Clear Small Grants or Deer Creek Watershed Alliance Rainscaping Cost Share Program

The MSD Project Clear Small Grants[21] program provides up to $3,000 in reimbursement for landscape projects that help retain rainwater on your property. The effort is focused on replacing impervious surfaces like pavement and turf grass with natural systems that allow water to infiltrate the soil, but they also support other creative native plant upgrades.

You are also within the boundaries of the **Deer Creek Watershed Alliance Rainscaping Cost-Share Program**[22] which provides a rebate of 75% of approved and documented costs up to a maximum of $4,500. Note you may receive only one award from one of these rainscaping programs.

Rainwater Harvesting

We discussed the possibility of adding a rain barrel to capture water from a downspout to reduce stormwater runoff and erosion. In areas with a mixed stormwater/sewer system they can help prevent treatment facilities from being overwhelmed when heavy rains occur, causing sewage to spill into our waterways.



We see the most success with rain barrel systems that account for:

- Overflow – Even a moderate rainfall on a roof can easily generate hundreds of gallons of water, quickly filling almost any size of rain barrel. Make sure there is a path for overflow away from the foundation.

[21] "Rainscaping Small Grants Program - Metropolitan St. Louis Sewer ...." https://msdprojectclear.org/what-we-do/rainscaping/small-grants/. Accessed 28 Jul. 2021.
[22] "Deer Creek Watershed Alliance Rainscaping Cost-Share Program", https://www.deercreekalliance.org/cost-share accessed 24 August 2023.

- Winter – Water expands when frozen and we have seen a number of rain barrels split open because there wasn't an easy way for them to be winterized. The illustration above shows a system with a valve that can be used to divert and completely bypass the cistern during the winter months. Or simply keep the valve at the bottom open so it can constantly drain out during the winter months.
- Mosquitos – A sealed system or screen at the inlet should keep mosquitos out.
- Debris – Leaves and dirt that wash off the roof can clog things up. A leaf filter or "first flush" system will help to keep it relatively clean.
- Weight – A 55 gallon barrel weighs over 450 pounds when full. Make sure there is a sturdy base for it to rest on.
- Algae – Where possible, situate a rain barrel or cistern in a shaded spot to avoid the foul odor that comes with algal growth. If a sunny location is the only option, a dark, opaque material is recommended.

If you don't have regular need for water in your garden, equip a low-pressure soaker hose made specifically for rain barrels and it's almost hands-free. Good Ideas for a Rain Barrel Soaker Hose[23]

For help with installation

Custom Foodscaping and **Confluence Habitats** are local companies that have developed an expertise in rainwater management. Custom Foodscaping has found success in utilizing used bulk containers for a very low-cost, but effective, rain catchment system.

For more information:

Rainscaping Guide: Rainwater Harvesting[24]

Local Rainwater Harvesting Resources[25]

[23] "Good Ideas for a Rain Barrel Soaker Hose - Home Guides." https://homeguides.sfgate.com/good-ideas-rain-barrel-soaker-hose-88795.html. Accessed 28 Jul. 2021.
[24] "Rainscaping Guide: Rainwater Harvesting - Missouri Botanical Garden." https://www.missouribotanicalgarden.org/sustainability/sustainability/sustainable-living/at-home/rainscaping-guide/rainwater-harvesting.aspx. Accessed 28 Jul. 2021.
[25] "Rainscaping Guide: Resources - Missouri Botanical Garden." https://www.missouribotanicalgarden.org/sustainability/sustainability/sustainable-living/at-home/rainscaping-guide/resources.aspx. Accessed 13 May. 2022.

V. EDUCATION AND VOLUNTEERISM

Community Science and Education

There is an ever-growing list of opportunities to help grow and deepen our understanding of our ecosystem. For a list of possibilities, follow this link to Bring Conservation Home's STL Naturescaping Info Hub.

Spread the Word

We look forward to a future visit to certify your landscape. In the meantime, please share your experience, the program, and our resources with your friends, neighbors, and relatives. Every landscape that incorporates native plants becomes a wildlife habitat that is critical for the future of our birds, native animals, and our quality of life.

VI. CERTIFICATION

For Silver Certification, complete the following:

Non-native Invasive Plant Removal
Remove Sweet Autumn Clematis and Wintercreeper (vertical surfaces).

Canopy Layers
Maintain your existing large native tree canopy layer and provide a second canopy layer by installing understory trees, shrubs, or wildflowers/native grasses.

Naturescaping
Convert at least 5% of the plantable space in your yard to native plants, a **total of 363 square feet** by our estimate.

Wildlife Stewardship
Install sufficient native plants to satisfy at least one of the wildlife habitat gardens (pollinator, woodland, songbird, or hummingbird). Your landscape satisfies the criteria for native bee stewardship practices and indoor cats in the Wildlife Stewardship section.

Stormwater Management
Criterion met by no use of inorganic fertilizers or pesticides and presence of more than two native canopy trees.

For Gold Certification, maintain existing Silver elements and complete the following:

Non-native Invasive Plant Removal
Remove English Ivy and Tree of Heaven.

Canopy Layers
Maintain your existing large native tree canopy layer and provide two more canopy layers by installing understory trees, shrubs, or wildflowers/native grasses.

Naturescaping
Convert at least 15% of the plantable space in your yard to native plants, a **total of 1,090 square feet** by our estimate.

Wildlife Stewardship
Install sufficient native plants to satisfy at least one additional wildlife habitat garden.

Stormwater Management
Criterion met by no use of inorganic fertilizers or pesticides and presence of more than two native canopy trees.

Education and Volunteerism
Satisfy one element from the Education and Volunteerism section.

Steps for Platinum will be provided after Silver certification.

Please refer to the Certification Criteria sheet that is included in the Homeowner's Resources Google Drive folder. There you will find criteria detailed for each level of certification, including options for meeting any additional criteria necessary to satisfy the Wildlife Stewardship or Stormwater Management sections noted above. Contact bch@stlouisaudubon.org when you are ready for your follow-up certification. No additional fee is required; the initial payment covers two site visits.

VII. RESOURCES

There are a number of resources related to the elements of the Bring Conservation Home program. A collection of resources including books, videos, websites, and much more is available on the STL Naturescaping Info Hub.

Where to Find Plants

We are fortunate to have a wide range of sources for high-quality native plants in the St. Louis Region. Linked here is a short list of sources that we recommend.

DISCLAIMER

The St. Louis Audubon Society, its employees, or its volunteers make no direct or implied guarantee about any of the recommendations in this report or discussions during the related landscape survey. Our advice is focused on selecting the right native plants for the right place to provide the desired habitat values. However, the success of any habitat gardening approach is determined by many other factors as well, including in part the quality and origin of the materials, the installation process, and the maintenance routine. Land stewards especially concerned about their ability to achieve the desired results are encouraged to consult the references included in the STL Naturescaping Info Hub, including the services of a native landscape professional.