Monarch Gardens for Schools
A Resource Guide for PreK-12
Urban School Communities
December 1, 2016

Your work as an educator is critically important to the City of St. Louis. Children are our future, and providing our children with a quality education is one of the most important things we can do to ensure they flourish now and succeed in the years to come. What you do as educators to help the children in our community learn and grow has impacts far beyond the classroom walls. We also know that impressive results occur when students have the opportunity to build on classroom instruction through projects held outside the classroom walls. Studies have shown that connecting people with nature has wide-reaching benefits. Students who participate in environment-based education experience gains in math, science, social studies and the language arts. Connecting students with nature also tends to result in improved standardized test scores and helps them develop important skills, such as in problem-solving and critical thinking. Offering students an environment-based education is one of the goals of the City of St. Louis Sustainability Plan, and several urban ecology efforts are underway in the City.

We launched Milkweeds for Monarchs: The St. Louis Butterfly Project in 2014 to help increase eco-literacy and connect people to nature where they live, work, learn and play. Perhaps nothing is more important than encouraging this opportunity to connect with nature in the school environment. With the help of several experts, partners and funders, the City is pleased to have created 50 monarch gardens at schools during the 2015-16 and 2016-17 school years. While establishing these grant-funded school monarch gardens, our partners at the Missouri Botanical Garden and Saint Louis Zoo have assembled numerous techniques, resources and suggestions that we think you will find valuable. Our hope in developing Monarch Gardens for Schools: A Resource Guide for PreK–12 Urban School Communities is to provide St. Louis educators with the information and tools they need to create, expand, and enjoy school monarch gardens.

A Chinese proverb suggests, “Tell me and I forget, teach me and I may remember, involve me and I learn.” By including students in the process of establishing, assessing, evaluating and maintaining school monarch gardens, you are involving them in a very special way of learning. Please take advantage of the resources suggested in this guide. Thank you for all you do to plant seeds of hope with our students, at your school, and in our community.

Sincerely,

Francis G. Slay
Mayor, City of St. Louis

Catherine L. Werner
Sustainability Director
December 1, 2016

Fellow St. Louis educators,

On behalf of the Missouri Botanical Garden and the Saint Louis Zoo, thank you for your efforts to infuse nature into the everyday experiences of your students and school communities. If you’re reading this guide, you’re either already doing this or interested in digging deeper into the world of milkweeds, monarchs, pollinators, plants, and urban nature. Either way, how wonderful!

This guide was not designed to be a comprehensive, everything-we-know-under-the-sun type of resource. That would be impossible, given the ever-changing nature of science and our world as well as the often overwhelming surplus of information that is hard to navigate. In contrast, this guide was intentionally designed as an easy-to-navigate, one-stop “cheat sheet” of what we’ve learned, heard, witnessed, and experienced in the process of working with local schools to create, maintain, use, and grow monarch gardens. It is a curated selection of monarch gardening best practices, tips and troubleshooting, case studies and lessons learned, curriculum connections, and local resources for trusted information, supplies, and support.

Throughout 2015-2016, the Milkweeds for Monarchs (M4M) school garden project team worked with 50 sites within the City of St. Louis, ranging from early childhood centers and elementary schools to middle and high schools, after-school clubs, churches, parks, and other greenspaces. Together, we created viable habitat for monarchs and other species in the form of gardens, with the active participation of more than 100 teachers and 1,500 students and community members. Together, we planned and planted these gardens with more than 500 native plants, we cared for and tended these gardens, we observed their natural cycles of life with awe and wonder, and along the way, we all learned more about the role we play in the extraordinary story of migrating monarchs, their dependence on milkweed, and their struggles to survive and thrive.

As with most worthy endeavors, this took a village. In addition to the primary project partners, school and district administrators, classroom teachers, students, families, and community helpers, these gardens also benefitted from the expertise and support offered by the Sophia M. Sachs Butterfly House, Grow Native!, Brightside St. Louis, and the U.S. Fish and Wildlife Service. This guide is intended as a tangible product of that expertise and support, as well as a curated list of our favorite, most trusted resources to go to when we want to dig deeper.

Our hope is that this guide will help support, encourage, inspire, and equip anyone who picks it up to become a citizen steward – helping lead the way for your local school, neighborhood, city, and region. Thank you!

~ Your fellow colleagues at Missouri Botanical Garden and Saint Louis Zoo
Regardless of where you place yourself on this trajectory, this guide has been designed to help you grow and expand your gardens, deepen your connections with your students and community, and help cultivate the next generation of citizen stewards.
Table of Contents

I. Milkweeds for Monarchs ........................................................................................................... 5
    • Why monarchs
    • Why milkweeds
    • Why us
    • Monarchs migration map
    • Milkweed for monarchs: the St. Louis butterfly project
    • Plant list - STL monarch mix

II. Design & Create .................................................................................................................... 9
    • Assessment of opportunity - school culture, administration support, student capacity
    • Schoolyard campus mapping and inventory
    • Suggested materials
    • Example garden designs/plans for different scales/environments
    • Recommended plant lists and local sources

III. Care For & Maintain ........................................................................................................... 23
    • Multi-season care guide and seasonal observations
    • Troubleshooting and creative solutions
    • Complying with city ordinances

IV. Use & Enjoy ....................................................................................................................... 43
    • Year-round, multi-disciplinary curriculum connections and resources (PreK-12)
    • Family engagement opportunities

V. Grow & Expand .................................................................................................................... 51
    • Enhancement and expansion of existing gardens to help establish wildlife corridors
    • Community asset mapping and engagement/partnership opportunities
    • Grants and other funding/resource sources

VI. Selected Readings and Resources ....................................................................................... 54
I. Milkweeds for Monarchs

Why monarchs?
Monarch butterflies are an iconic insect, a “bug” that everyone loves. Not only are they beautiful, but they also have a unique and amazing natural history. For over a million years these majestic butterflies have embarked upon an incredible journey, migrating from points as far north as Southern Canada, to as far south as Northern Mexico. While on their 3,000-mile trip, it can take monarchs up to two months, and several generations to complete their trip. They travel 50-100 miles per day to a location neither they nor their parents or grandparents have ever seen.

Unfortunately, monarch butterfly populations have dropped by 90 percent over the last 20 years. Herbicides used to treat crops such as soybeans and corn have played a role in wiping out the milkweed plants upon which all monarchs depend. In addition, less habitat, forest fragmentation, and climate-induced global warming have all affected monarch survival. Now your monarch garden, and others like it are making a difference for this incredible species.

Why milkweed?
While adult monarchs can feed upon a variety of flowers for nectar, caterpillars depend entirely on milkweed. A female monarch butterfly will seek out a milkweed plant to lay her eggs on because that is the only food that the caterpillars can eat. Plants like this are known as host plants. When they hatch out of their eggs, caterpillars will spend 10-15 days munching their way through leaves on the plant until they are ready to build a chrysalis for their metamorphosis into an adult butterfly. Without milkweed, caterpillars have nothing to eat.

You can help, though, by maintaining and expanding your monarch garden with the easy tips outlined in this guide. By doing so, you will provide more food that blooms throughout the entire growing season (April-October) for adult monarch butterflies – and other pollinators – as well as a ‘nursery’ for the monarch caterpillars.

Why us?
We are fortunate in St. Louis to be right in the middle of a major monarch migration byway. Butterflies in mid journey need to rest, reproduce, and eat, and are dependent on our milkweed and nectar plants to do so. By working together, we are strengthening a corridor where monarchs can safely travel, with easy access to milkweed, and nectar sources all along the way. We are reestablishing the ‘highway’ for monarch butterflies to continue to make their way along this amazing journey, each and every year.

Good luck, enjoy your garden, and thank you for continuing to help our monarchs.
The St. Louis Butterfly Project

About the Initiative

The City of St. Louis Urban Vitality & Ecology Initiative is a citywide effort to help connect people and urban nature. The dual goals of Milkweeds for Monarchs: The St. Louis Butterfly Project are to (1) increase monarch butterfly habitat and (2) help people experience the splendor of monarchs where they live, work, learn and play. Milkweeds for Monarchs advances a priority in Mayor Slay’s Sustainability Action Agenda: to improve eco-literacy by fostering an enhanced connection between people and urban natural resources. Access to nature can improve health and well-being, such as by reducing stress and anxiety, as well as provide important learning opportunities and outcomes. Milkweeds for Monarchs also aligns with the City’s Sustainable Neighborhood Initiative, as creating monarch gardens is an opportunity to enhance neighborhood aesthetics and to build relationships between community members.

To launch the project in 2014, Mayor Slay arranged to have the City plant 50 monarch gardens, and challenged the community to plant an additional 200 monarch gardens to celebrate the City’s 250th birthday. To date, approximately 350 new monarch gardens have been registered on the city’s website. In 2015-16, the City expanded Milkweeds for Monarchs to more neighborhoods and 50 schools in the City of St. Louis. In 2016, Mayor Slay launched the St. Louis Riverfront Butterfly Byway of monarch habitat areas along the riverfront.

In partnership with community plant and butterfly experts, the City has created a number of tools and resources to assist in the creation and maintenance of monarch gardens, including a STL Monarch Mix of recommended plants for your garden, guides for where to find STL Monarch Mix plants, and how to care for them once planted. To find these materials, visit stlouis-mo.gov/monarchs. Through its annual Neighbors Naturescaping grant program, Brightside St. Louis offers plants and tools for creating monarch gardens in public spaces.

Why Monarchs and Milkweed?

Famous for their remarkable 3,000 mile annual migration between Mexico and Canada, monarchs are important for their pollinator role in our ecosystem. Monarchs are iconic and easily recognizable; this makes them a unique symbol and educational tool for demonstrating the importance and joy of experiencing biodiversity in our everyday lives. The monarch butterfly population has declined more than 90 percent over the last two decades due to habitat loss, climate change and chemical misuse. Female monarchs depend on milkweed to lay their eggs and feed their caterpillar larvae. While other flower species can serve as nectar sources for butterflies, we need milkweeds to play host to monarch caterpillars, so the monarch population can grow.

For more information on other sustainability initiatives in the City of St. Louis, Contact Catherine Werner, Sustainability Director, Office of the Mayor WernerC@stlouis-mo.gov or visit stlouis-mo.gov/sustainability.

For more information on Milkweeds for Monarchs visit stlouis-mo.gov/monarchs or contact Brightside St. Louis at info@brightsidesl.org.

To view a map or register a monarch garden planted in the City of St. Louis, please visit stlouis-mo.gov/monarchs.
Milkweeds for Monarchs: The St. Louis Butterfly Project

STL Monarch Mix - Plant List

Butterfly Weed
Asclepias tuberosa
Blooms June-July, Orange

Common Milkweed
Asclepias syriaca
Blooms June-Aug, Light Pink

Swamp/Marsh Milkweed
Asclepias incarnata
Blooms July-Aug, Pink

Whorled Milkweed
Asclepias verticillata
Blooms June-July, White

Bee Balm/Bergamot
Native Monarda Species
Blooms July-Sept, Lavender

Black-Eyed Susan
Rudbeckia fulgida
Blooms June-Oct, Orange-Yellow

Goldenrod
Solidago drummondii
Blooms Aug-Sept, Yellow

New England Aster
Symphyotrichum novae-angliae
Blooms Aug-Sept, Pink-Purple

Purple Coneflower
Echinacea purpurea
Blooms June-Aug, Pale Purple

Photos courtesy of Brightside St. Louis, Catherine Werner, Missouri Botanical Garden, and Monarch Watch

For more information on other sustainability initiatives in the City of St. Louis, visit www.stlouis-mo.gov/sustainability.
For more information on Milkweeds for Monarchs: The St. Louis Butterfly Project, visit www.stlouis-mo.gov/monarchs or contact Brightside St. Louis at info@brightsidestl.org
Milkweeds for Monarchs:
The St. Louis Butterfly Project
Finding Monarch Garden Plants

Purchasing Native Plants
Grow Native! has a list of native plant resources: grownative.org/resource-guide/plants. Missouri Wildflowers Nursery has online purchasing options and supplies plants for many native plant sales around the region. Visit www.mowildflowers.net for more information.

Local Nurseries and Garden Centers
STL Monarch Mix plants can be found at the following locations:

- **Bowood Farms**
  4605 Olive Street
  St. Louis, MO 63108

- **Flowers & Weeds**
  3201 Cherokee St.
  St. Louis, MO 63118

- **Garden Heights**
  1605 S. Big Bend Blvd
  Richmond Hts., MO 63117

- **Greenscape Gardens**
  2832 Barrett Station Road
  Manchester, MO 63021

- **Rolling Ridge Nursery**
  60 N Gore Ave
  Webster Groves, MO 63119

- **Sugar Creek Gardens**
  1011 N. Woodlawn Ave
  Kirkwood, MO 63122

STL Monarch Mix:

A note about the STL Monarch Mix:
The nine plants included in the STL Monarch Mix have been carefully selected to present the best-suited collection to use locally in support of the monarch butterfly population. We recommend including as many milkweed plant types as possible, as they are the most important for monarch breeding. Monarchs also need plants that act as nectar sources throughout the growing season. Native plants that have not been treated with chemicals are the best choice for monarch gardens. Using Tropical Milkweed is not recommended, as it is linked to a disease that impacts monarchs.

City of St. Louis Grant Opportunity
The Brightside St. Louis Neighbors Naturescaping Grant Program is an opportunity to obtain free garden material for beautification projects and monarch gardens that are created and maintained in public spaces. Each year, the Neighbors Naturescaping kick-off meeting takes place in May and applications are due in August.

To learn more, call (314) 772-4646 or visit www.brightsidestl.org/what-we-do/neighbors-naturescaping/

For more information on other sustainability initiatives in the City of St. Louis, visit www.stlouis-mo.gov/sustainability.
For more information on Milkweeds for Monarchs:
The St. Louis Butterfly Project, visit www.stlouis-mo.gov/monarchs
or contact Brightside St. Louis at info@brightsidestl.org

Annual Plant Sales
Opportunities change each year, but these organizations tend to offer annual plant sales featuring native plants. Check their websites for updated information:

- **Flora Conservancy Spring Sale**
  Saturday before Mother's Day
  Forest Park Greenhouse

- **Missouri Prairie Foundation Plant Sale**
  Town & Country Whole Foods

- **Wildflower Market at Shaw Nature Reserve**
  Visit the Missouri Botanical Garden website for plant sales at Shaw Nature Reserve and Sophia M. Sachs Butterfly House
II. Design & Create

Whether you are concerned about monarchs, interested in infusing more ecology into your students’ lives, or hoping to engage your class in a beneficial Science, Technology, Engineering, Art and Mathematics (STEAM) experience, a monarch garden is an excellent project for any St. Louis-area schoolyard. The plants that comprise these gardens are native to Missouri, so they are readily available (check with local nurseries) and not very expensive. Native plants are adapted to live in our soil, to survive the extremes of our climate, and to survive with little tending aside from periodic weeding. There are programs like the Partners for Fish and Wildlife Program of the FWS that will help you with designing, cost sharing and installing your garden.

As the need to create habitat suitable to support the monarchs has received more attention in recent years, many organizations and nurseries have come forward to provide support and make resources available to those looking to create these gardens in schoolyards and other public spaces. This section will walk you through the essential steps to consider when designing and creating a monarch garden, and provide suggestions for navigating obstacles you might encounter along the way.

Design & Create | Assessment of opportunity

While any project undertaken within a school environment benefits from some forethought, developing an action plan around a garden project is especially important during the initial design phase. Because gardens are necessarily located outdoors and in a communal space, the design of the garden must take into consideration not only the garden’s purpose, but also the ways it stands to impact other teachers and students, the aesthetics of the school, and possibly the perspectives of nearby neighbors. In addition, an action plan will also help you:

- take an inventory of existing plantings, resources and amenities (hose bibs, lawn care tools, etc.) that are available and accessible;
- identify resources, tools, and partnerships in your school that you might not have realized were available to you for year-round help;
- develop a plan not just for installation, but also for long-term maintenance of the garden, which will assist you in advocating for the project to administrators;
- recruit others in the building to your cause, especially those who are likely to similarly benefit from the garden as an educational opportunity;
- brainstorm other possible projects such as a food garden, hummingbird garden (another migratory species) or bird habitat, bat gardens, storm water retention that could be built off of your plan for future benefit to the school, students, and teachers.

When reading reports online and in the newspaper that the number of monarchs that reached the winter sanctuary in Mexico had increased, we were proud to be a small part of the effort to provide milkweeds for these magnificent monarchs. We felt our efforts were helping to make a difference for the betterment of the monarchs.” ~Teacher

On the following pages, a grid has been created that poses questions to help you get started as you think about your project. Answer as many questions as you can, then keep the grid handy to review and revise as you learn more and progress through your project planning.
<table>
<thead>
<tr>
<th></th>
<th>Where are we now?</th>
<th>What challenges do we face?</th>
<th>Where could we go from here?</th>
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</thead>
<tbody>
<tr>
<td><strong>Inventory</strong></td>
<td>What opportunities do the schoolyard and neighboring community currently offer in terms of nature explorations and experiences for students?</td>
<td>What areas of the schoolyard and neighboring community are ‘off-limits’ and why?</td>
<td>What opportunities for biodiversity could be created or enhanced in the schoolyard and neighboring community through development?</td>
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<tr>
<td><strong>Objectives</strong></td>
<td>What grade level standards could be met through firsthand experiences with a biodiverse schoolyard garden?</td>
<td>What currently prevents us from focusing our attention on biodiversity and ecology with students?</td>
<td>What development or enhancement ideas could we pursue in the future?</td>
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<td>What do we hope to accomplish for students and the community?</td>
<td>How can we address those challenges?</td>
<td>What additional opportunities would these developments provide to students, teachers and the community?</td>
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<td><strong>Team</strong></td>
<td>What teachers, staff members, administrators, student family members currently support the use of outdoor exploration as a teaching tool and why?</td>
<td>What teachers, staff members, administrators, student family members and community members do not currently support the use of outdoor exploration as a teaching tool, and why?</td>
<td>Who within the school and community environment might be recruited to support development of outdoor spaces as learning opportunities?</td>
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<td><strong>Budget</strong></td>
<td>What budget is currently available that might be used to purchase supplies and equipment to use outdoors?</td>
<td>What other expenses currently take budgetary priority over outdoor education supplies and equipment?</td>
<td>What other funding sources might be explored for future development? What current expenditures be mitigated or adjusted due to biodiversity conservation efforts? (i.e. could students help care for the grounds?)</td>
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<td>Where are we now?</td>
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As you formulate your plan, consider the following:

• Consult the Missouri Learning Standards to identify what standards at every grade level might be met using the proposed garden. Consider reaching out to those teachers whose curricula lend themselves toward frequent use of gardens to invite their support and participation in your proposal.

• If applicable, also consult your school district’s pacing guide to determine at what times during the school year various grade levels may be studying concepts that can be reinforced by the proposed garden, and reach out to fellow teachers in correlating grad levels to gauge interest in participating in garden use.

• Visit the Milkweeds for Monarchs website for an updated description of the initiative, recent news, and other information.

Navigating Bureaucracy

Creating something new in a school environment can be tricky. As you discuss your garden with other teachers and administrators, you may be told that what you propose is not allowed due to school or district policy. If this happens to you, all is not lost. Before you give up, try the following:

• Ask clarifying questions. Find out when and why the policy was put into place, and confirm that the policy is still active. You may find that the policy cited has been either misunderstood, is obsolete, or applies in some cases but not others.

• Find the face behind the policy. For example, if the issue raised has to do with the school’s landscaping crew, reach out to the person responsible for that team and ask to speak with them about what you want to do. You may find they are willing to work with you to find a compromise.

• Don’t give up. Be tactful, of course, but don’t be afraid to revisit the question with your administration again. Write up a plan that highlights the benefits the garden offers to the school and your students and make this information available to administrators.
Design & Create | Schoolyard campus mapping and inventory

Deciding where to install your garden is as important as deciding what to plant there. Before you begin, create a map of your schoolyard showing an aerial view of your existing grounds.

Tips for creating your schoolyard map:

- Visit an online map site such as Google Maps, Bing Maps, Yahoo Maps, or MapQuest and search for your school’s address. Switch the satellite/aerial view and zoom in to view your schoolyard from above.
- Use graph paper to lay out the schoolyard, using the scale provided by the map website if possible. (A sample grid has been provided on the next page.)
- Indicate N-S-E-W direction on your map, and label surrounding streets or turf grass and railroads.
- Mark any existing trees, shrubs, landscaping, fences, and other ‘permanent’ features. Don’t forget power lines. Ask for help from school facilities or administration staff.
- Mark any ‘off-limits’ areas on your schoolyard, such as dumpster areas, parking lots, etc.
- Indicate hills and valleys with arrows pointing from the top of the slope to the bottom, to show rain or storm water flow.
- Locate hose bibs and other water sources on the building and identify the locations for these on the map as well. Note: You can plant a shaded monarch garden as well, and this might be more appealing to some schools so that kids can have a “cool” place to observe monarchs.

Once you have created a map of your schoolyard, look for possible areas where a garden could be installed. In general, you will want to consider the following:

- **Sunlight** – most native wildflowers for monarch gardens prefer prairie-like conditions, and grow best when the sun shines directly on them for six or more hours per day. As a result, you will want to consider where the shadows of your building, surrounding buildings, and existing trees tend to fall, and select an area that falls outside of commonly shaded parts of the schoolyard.

- **Water Sources** – while native gardens, once established, rarely need to be watered, there will be some need to provide water in the months immediately following planting and during excessively dry periods. Try, if possible, to place your garden in reach of hose bibs or near doors convenient to a sink where watering cans could be filled. Rain barrels can also be used as an alternative water source.

- **Accessibility** – a schoolyard garden is of little use if students and teachers cannot get to it easily. Teachers are also more likely to use the garden if it is located within a short walking distance of the building. Good options to consider might be in or just outside the school playground, or as a landscaping feature outside of a main door. Make sure that the garden is designed internally so that it is easily accessible as well with paths for observing/walking.

- **Aesthetics** – while some wildflowers ‘behave’ nicely in a bed, a native garden typically has a wilder, ‘weeder’ look to it than a landscaped garden of cultivated plants and shrubs. If your garden will be situated in full view of the street or adjoining neighboring properties, keep this in mind as you plan and try to select plants that complement the landscape. Mulch can also be used to improve the look of the garden. Also plan to include a sign that explains the nature of the garden and its purpose.

With these requirements in mind, identify areas on your map where a garden might be installed. Bear in mind that if green spaces are scarce in your schoolyard, a garden could be constructed as a raised bed on pavement if needed. Note that monarch gardens need not be large, but you should allow at least 1 square foot for every plant you plan to include. (A 4’ x 4’ bed can accommodate approximately sixteen plants.)
Design and create | Suggested materials and sources
(This is only a preliminary list. When you actually begin to create your own garden you may need to tailor this list to your own specific project).

☐ Raised bed (if not planting directly into the ground)
  • [Greene's raised bed](#) systems are made of cedar, are modular, and can be assembled without tools.
  • [Other ideas for raised beds](#).

☐ Weed barriers
  • [Vigoro natural weed block](#) is made from biodegradable corn fibers. Using this in your garden will keep yard weeds at bay for a season or two while your native garden gets established.
  • [Fabric staples](#) are used to hold weed barrier sheeting to the ground.

☐ Compost
  • [The City of St. Louis Forestry Division](#) makes leaf compost available free of charge to St. Louis City residents at many sites across the city.
  • [St. Louis composting](#) is another good source for quality compost and compost-enriched soil, and delivery to your schoolyard is an option.

☐ Mulch
  • [The City of St. Louis Forestry Division](#) also offers free mulch to St. Louis City residents and city-based sites.

☐ Tools
  • Hand trowels
  • Garden gloves
  • Spade (for turning turf)
  • Mallet and Phillips-head screwdriver (for assembling a Greenes bed, if appropriate)
  • Rake or hoe for breaking up soil
  • First aid kit
  • Camera (to document your progress)
  • Garden log, to record your plants and their placement

☐ Seeds vs. plugs
In the spirit of promoting ease and higher success rates, we strongly recommend using plugs (baby plants) to start or add to your garden. Plugs purchased from a local native plant nursery (see list on pg. 20) will help kick-start your garden the same season in which it’s planted. Starting plants from seed or seeding a garden, however, are trickier but doable. If you’re game for trying these methods, here are a few relevant resources:
  • Starting seed indoors or directly sowing seed into your garden: This [reference](#) from Monarch Watch details propagation methods using seeds, cuttings, and even root divisions.
  • Seed propagation of milkweed and other native perennials: Consult this [handy reference](#) compiled by our colleagues at Shaw Nature Reserve for helpful information about seed treatment, storage, and germination for a diversity of native plants.
“RAISED-BED MONARCH BUTTERFLY GARDEN”

**Planting key:**
1. orange coneflower (*Rudbeckia fulgida*)
2. bee balm/bergamot (*Monarda spp.*)
3. butterfly weed (*Asclepias tuberosa*)
4. common milkweed (*Asclepias syriaca*)
5. New England aster (*Symphyotrichum novae-angliae*)

The headquarters complex of St. Louis Public Schools (SLPS) is located in downtown St. Louis, amid tall buildings, parking garages, and a fair amount of gray, paved surfaces. The patch of green space between the HQ offices and its own parking garage was the chosen site for the district’s monarch garden, a location by which every single employee would be walking past every single day.

“Hardly a day goes by that someone does not mention the garden, what they observed, their own gardens, and future ideas for the space,” reports Susan Raney, SLPS Science Curriculum Specialist. “Even our local district attorney mentioned that we need to plant some vegetable gardens now. It definitely got people talking and thinking and imagining the ‘what’s next’.”
“BUTTERFLY BERM”

Planting key:
1. ninebark (*Physocarpus opulifolius*)
2. New Jersey tea (*Ceanothus americanus*)
3. rose verbena (*Glandularia canadensis*)
4. purple coneflower (*Echinacea purpurea*)
5. aromatic aster (*Aster oblongifolius*)
6. prairie blazing star (*Liatris pycnostachya*)
7. butterfly weed (*Asclepias tuberosa*)
8. lanceleaf coreopsis (*Coreopsis lanceolata*)
9. downy phlox (*Phlox pilosa ssp. Ozarkana*)
10. shining blue star (*Amsonia illustris*)
11. butterfly watering hole

“RAIN GARDEN”

Planting key:
1. Virginia wild rye (*Elymus virginicus*)
2. prairie blazing star (*Liatris pycnostachya*)
3. blue lobelia (*Lobelia siphilitica*)
4. wild bergamot (*Monarda fistulosa*)
5. meadow phlox (*Phlox maculata*)
6. culver’s root (*Veronicastrum virginicum*)
7. prairie cord grass (*Spartina pectinata*)
8. cardinal flower (*Lobelia cardinalis*)
9. marsh milkweed (*Asclepias incarnata*)
10. golden alexander (*Zizia aptera*)
“WILDLIFE CORRIDOR”
Most schools have neighbors, whether that’s residential homes, businesses, parks, vacant lots, or other parcels. As one of the social “hubs” of its community, each school has the potential to connect with its neighbors - literally! Here’s a visual that illustrates how each parcel could connect in strategic ways to create corridors.

Encourage your neighbors to plant flowering meadows and hedgerows of native trees and shrubs. Linking properties this way provides corridors where wildlife can travel freely.
Welcome nature to your neighborhood by planting milkweed and other plants that will attract and help sustain monarch butterflies and other pollinators. Below are our “Top 10” recommended species to start with, followed by a list of other natives that can provide season-long bloom, beauty, food, and habitat for a host of wildlife species. In addition to integrating milkweed plants into your garden design, it is important that you choose a selection of other plants with overlapping bloom times, ensuring nectar availability throughout the season.

### Recommended species

- **Asclepias incarnata** – swamp milkweed
- **Asclepias syriaca** – common milkweed
- **Asclepias tuberosa** – butterfly weed
- **Asclepias verticillata** – whorled milkweed
- **Liatris aspera** – rough blazing star
- **Echinacea purpurea** – purple coneflower
- **Monarda fistulosa** – wild bergamot
- **Symphyotrichum novae-angliae** – New England aster
- **Rudbeckia fulgida** – orange coneflower
- **Solidago drummondii** – goldenrod

### Other recommended plants for monarch gardens

For additional plant lists and recommendations:
- [www.grownative.org](http://www.grownative.org)
- [www.monarchwatch.org](http://www.monarchwatch.org)
- [www.monarchjointventure.org](http://www.monarchjointventure.org)

Local nurseries and garden centers – St. Louis area:
- Bowood Farms – St. Louis
- Garden Heights – Richmond Heights
- Rolling Ridge Nursery – Webster Groves
- Colors of Spring – St. Louis
- Greenscape Gardens – Manchester
- Sugar Creek Gardens – Kirkwood
Design & Create | Installing the garden

Prepping your space
If your garden will be installed in an area that is currently grassy, remove the existing vegetation so that your garden plants can establish themselves without competition from other plants. There are several options to consider:

• Use a spade to ‘turn’ the turf. Dig into the ground about six to ten inches and turn the clumps upside-down. Break up the clay on the bottom into smaller chunks using your fingers or a garden hoe so that the foliage is completely covered. Cover the area with weed barrier, burlap or newspapers until you are ready to plant. The best time to prepare a site and install a garden is during the spring.

• If you are installing a raised bed, roll weed barrier out on top of the grass to cover an area that is at least ‘1’ wider and longer than the dimensions of your bed box. Use fabric staples to tack the sheeting down, and assemble the bed on top of the barrier. Fill the bed with soil, and cover the exposed weed barrier with mulch.

• Purchase a commercial herbicide and apply to the area where your garden will be installed about 3-5 days prior to your planned installation. Keep children and pets away from the area per the instructions on the bottle. The chemicals should break down after a period of time and leave the ground safe to plant. For larger areas you spray the entire area in the late summer early fall and let that die over winter. You can spray it again in the spring right before you plant if you have some weeds coming up then plant your plugs/seeds 3-5 days after spraying. This helps with weedy competition which is important if you don’t have an aggressive post planting management regime.

If you are planning to use a raised bed, be sure to fill the completed bed with at least 6-8 inches of soil if the box is on grass, and 12-18 inches of soil if the bed is on a solid surface such as pavement.

Prepping your soil
Because the plants that make up monarch gardens are native to Missouri, your soil may not need much preparation at all. However, to give your plants the best chance of survival, you may want to:

• Have your soil tested for contaminants. This is especially advised if your schoolyard was formerly a residential property and may contain lead paint flakes. Soil testing kits are available at your local garden store, or you can bring a sample of soil to the Missouri Botanical Garden’s Kemper Center for Home Gardening to have it tested for a nominal fee. For more information on how to collect and prepare soil for testing, see this video.

• Break up your soil. Even if you are not planting into grassy sod, you will want to break up your soil into loose, small chunks and remove any large stones. This aerates the soil so that water passes through it more readily and gives tender young roots a better opportunity to grow and expand into the soil. Breaking up the soil also increases the chances for your weedy seed bank to come up.

• Add compost to your soil. Missouri soil, especially in urban areas, tends to be heavy, clay-based soil with very little organic material. Mixing in a bag or two of compost-rich garden soil from a home center will make the soil more nutritious for the plants and allow them to establish strong roots.
Arranging your plants
For best visual appeal and season-long sustenance for butterflies and other wildlife, your plant selection should include plants of different sizes that bloom at various times of the year. Once you have them in hand, consider the following garden design tips:

- If your garden is situated as an ‘island’ in the midst of a lawn, place the tallest plants at the center and shorter plants near the edges.
- If your garden is situated against a wall or fence, place the tallest plants nearest the wall or fence with smaller plants nearer the front.
- Consider bloom times as you place your plants. Intersperse spring-blooming flowers with fall-blooming flowers so that the garden provides visual appeal and wildlife support throughout the entire growing season. Although there are recommendations out there to clump your plants together so it is easier for pollinators to find them. Balancing human aesthetics with wildlife needs here.
- If your garden includes both sunny and shaded areas, be sure to place your plants according to their sun and shade preferences.
- Remember to check the spacing recommendations for the plants you’ve chosen. Crowded plants will compete with each other for soil and water, and may shade each other out.

Planting your garden
You’re ready to put your plants in the ground! For this, you will want to keep the following in mind:

- Roll weed barrier over the garden space, tacking it down with fabric staples. Cut Xs in the cloth where each plant will be planted.
- Use a hand trowel to dig holes for the plants that are no deeper than their pots. Once in the ground, the soil that came with the plant in its pot should sit flush with the surface of the garden soil.
- If when you pull your plants from their pots, their roots appear tightly bound in the soil ball, use your fingers to loosen them as best you can. Some may tear, but breaking them up will keep them from continuing to grow in circles and encourage them to branch out into the soil.
- Place the plant into the hole you created and load soil into the surrounding space so that the plant sits firmly upright. Try not to overpack the soil, though; air pockets are desirable.
- If your plant came with an identifying tag, you may want to put the tag into the soil near the plant so you’ll remember later what you planted where. (see About our garden, page 23)
- When the plants are in place, cover the soil around them with a layer of mulch. This will help conserve moisture and keep weeds from sprouting.
- Water your garden thoroughly once all plants are in the ground. In general, plan to give each plant at least 1 gallon of water.
- Remind your school’s grounds crew and administration of the garden’s location and confirm your plans for the garden’s care and upkeep.
Sharing your garden
Once your garden is in the ground, you will want to take steps to engage students in its upkeep and make its purpose clear to others.

• Create a sign for your garden. Give it a name, and make clear that it is a native garden that was created to support and study native plants and animals. A brightly colored sign will serve as a visual cue to your school’s landscaping crew and/or curious neighbors that this is an intentional space designed for a purpose.

• Your actual monarch garden may be small, and likely couldn’t host all your school’s students at once. However, there are creative ways to enable all students to connect with the garden: They could help create plant labels, stepping stones, or other decorations. They could record observations in the garden log. They could take photos or create posters to share with families.

• Include photos and updates about your garden in parent newsletters and on social media.

• Involve your students and the school community in the care and upkeep of the garden.

Whole-school ownership
The Soulard School

Located on a vacant lot about one and a half city blocks east of their main school building, The Soulard School’s M4M garden was added to diversify this school’s existing garden plots. Two of its ten raised beds are devoted to the Milkweeds for Monarch project. Situated on a neighborhood lot with easy access from the sidewalk and road, this lot serves as a convenient outdoor classroom for Soulard teachers and PreK-Grade 5 students who frequent it throughout the year for a variety of classroom extensions, helping with its care and maintenance and observing its natural cycles. Soulard’s kindergarten class, for example, has been learning about butterflies and their stages of development. This focus was integrated into their extended core studies as well, including a STEAM lab. Students learned about camouflage and patterns, created their own camouflage on a butterfly shape, and then “hid” them in the M4M garden area during STEAM class to see if their peers could discover them. Since the installations of the first M4M gardens at this site, an additional M4M garden now grows in their yard area at their main school creating stepping stones of monarch habitat throughout their city block.

“Adding the monarch garden into the mix of our other gardens enabled our students to observe more activity,” said school principal Kerri Fair. “Our outdoor classroom and garden space is a favored spot.” For The Soulard School community, the M4M garden is a visual reminder that we’re all connected to something bigger.
III. CARE FOR & MAINTAIN

Once installed, your native garden will require a season or two to become established. During this time, you may need to water it during especially dry periods, and take note of any plants that wither so that they can be replaced. The following pages include a month-by-month calendar that can provide some guidance as to what to expect to see in your garden during various parts of the year, and what maintenance tasks you and your students will want to prioritize to keep your garden healthy.

You will find it helpful to keep a log of your garden from year to year, and to familiarize yourself and others in your school with the plants growing there. A sample log is provided on the following page.

For more information about native Missouri wildflowers, a field guide is helpful. The following guides are particularly helpful:

- Missouri Wildflowers, by Edgar Denison
- Tried and True Missouri Native Plants for your Yard, by the Missouri Department of Conservation
- Ozark Wildflowers, by Don Kurz

Please note that every garden is unique. The following calendar includes information about the recommended ‘Monarch Mix’ plants, identified by the City of St. Louis, but your garden may include different species or varieties from those included here. Likewise, even if two gardens are planted with the same collection of plants, the location conditions can impact the way those plants grow, how long and how often certain plants flower, and what insects and other animals might visit.

Keeping an ongoing observation log is a great way to get to know your garden’s particular habits, blooming patterns, and visitors.

“Our 7th graders prepared the ground for planting and then the 1st graders arrived to put the plants in the ground. We had discussions about why the soil needs to be tilled and how weeds can take water and nutrients away from the pollinator plants. Many classes have been out to observe the plants and the organisms living in the pollinator garden. The first graders do a unit on butterflies and were able to tie it in directly with our new monarch garden.”

~ Teacher
# About Our Garden

**Installation Date**

**Garden Address**

**Neighborhood**

**Ward#**

<table>
<thead>
<tr>
<th>Plant Name</th>
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**Our garden design**
Gardening Terms

Deadhead - Remove dead flowers by snipping them with pruning shears or scissors.

Divide Clumps - If the plant becomes overcrowded, dig up the unwanted portion and transplant or share with friends.

Overcrowding - Plants look spindly, rather than bushy, and do not have room to grow.

Pinching back - Remove the new leaves and buds at the end of the stem to encourage branching. This should be done before the flower buds get large.

Seed pods - Either remove seed pods while still green to prevent the seeds from spreading, or let the pods dry on the plant and collect the seeds for future use. When the pods turn brown and start to split, save the seed to plant later.

Self-seeds - This means the plant will drop seeds which should grow the following year.

Staking - This is done if a plant gets too tall and starts to droop. Place a stake in the ground very near the plant and loosely tie the plant to the stake to give it support and help it stand up straight.

Thin and cut back - To avoid plant crowding, cut until there is adequate space between plants. Do this either shortly after buds appear in early spring or once flowering is finished in the fall.

Swamp/Marsh Milkweed
Does best in a low spot and tolerates more moisture than the other plants. Do not transplant once established, as plants have deep taproots. Remove seed pods prior to splitting. Thin and cut back new growth when plant becomes overcrowded.

Bee Balm/Bergamot
This plant needs good air circulation, so make sure it has room. You can deadhead the plant to prolong the bloom period.

Butterfly Weed
Butterfly weed does not transplant well due to its deep taproot, and is probably best left undisturbed once established.

Black-Eyed Susan
To prolong the bloom, you may deadhead the plant. Divide clumps when the plant becomes overcrowded.

New England Aster
Pinching back stems several times before mid-July will help limit plant height to 4 feet, promote bushiness and perhaps lessen the need for staking. The plant will self-seed in optimum growing conditions. If the foliage has become unsightly or unwanted self-seeding is occurring, the plant can be cut to the ground after flowering.

Milkweeds for Monarchs is an initiative of the City of St. Louis Office of Sustainability.
For more information on this or other sustainability initiatives in the City of St. Louis, contact Catherine Werner, Sustainability Director, Office of the Mayor WernerC@stlouis-mo.gov or visit stlouis-mo.gov/sustainability.
AUGUST

What to expect this month:

Common milkweed (*A. syriaca*) will end its bloom cycle this month. Watch for developing seed pods, but do not harvest them yet.

Swamp milkweed (*A. incarnata*) will be in full bloom this month. Watch for caterpillars, milkweed beetles and milkweed buds. Aphids may appear as well, creating yellow clusters near stem tips.

Butterflyweed (*A. tuberosa*) will end its bloom cycle this month. Watch for developing seed pods, but do not harvest them yet.

Whorled milkweed (*A. verticillata*) will have completed its bloom cycle this month. Watch any developing seed pods and harvest when the pods turn brown and split open.

Purple coneflower (*E. purpurea*) will complete its bloom cycle this month. If spent blooms are left on the stem, watch for goldfinches and other birds visiting to eat the seeds.

Bee balm (*M. spp.*) – Some species will complete blooming this month, but many will continue blooming into September. Watch for visiting bees and other pollinators.

Goldenrod (*S. drummondii*) – Blooms will be opening this month. Watch for bees and other pollinators, including beetles and flies.

Black-eyed susan (*R. fulgida*) – Some blooms may be spent, but more will emerge into fall. Spent blooms may be removed (deadheaded) to encourage more flowers to emerge, or left in place to encourage birds to visit in search of seeds.

New England aster (*S. novae-angliae*) – This late bloomer will just begin to flower this month. Watch for buds to appear and open to attract butterflies, bees and other pollinators.

What to do this month:

- Daily remove any competing weeds and unwanted sprouts that emerge this month. Make sure to reference your plant guide if you are not sure if it is a weed or not.
- Water your garden once per week for one to two hours, preferably using a sprinkler or a soaker hose. This will encourage your plants to create deeper roots.
- If aphids appear, spray them off with a hose or put on rubber gloves and remove them by hand. (They will not harm your bare hands, but they crush easily and will stain your skin a lovely shade of yellow.)
- Watch for monarch caterpillars, milkweed bugs, milkweed beetles, honeybees, bumblebees, and other pollinators.
- Watch for birds such as goldfinches (males are bright yellow, females are a dusky green) and sparrows.

Observations this month:
**SEPTEMBER**

**What to expect this month:**

**Common milkweed** (*A. syriaca*) Seed pods will mature this month. Watch for them to turn brown and split. Seeds may be collected once the pod has dried.

**Swamp milkweed** (*A. incarnata*) will end its bloom cycle this month. Watch for developing seed pods, but do not harvest them yet.

**Butterflyweed** (*A. tuberosa*) Seed pods will mature this month. Watch for them to turn brown and split. Seeds may be collected once the pod has dried. For additional information checkout [MBG: Native Propagation](#).

**Whorled milkweed** (*A. verticillata*) Seed pods will mature this month. Watch for them to turn brown and split. Seeds may be collected once the pod has dried.

**Purple coneflower** (*E. purpurea*) Spent blooms left on the stem may attract goldfinches and other birds visiting to eat the seeds.

**Bee balm** (*M. spp.*) – Most species will complete blooming this month. Watch for visiting bees and other pollinators through the end of September.

**Goldenrod** (*S. drummondii*) – will be in full bloom this month. Watch for bees, butterflies, beetles, flower flies and other pollinators.

**Black-eyed susan** (*R. fulgida*) – Some blooms may be spent, but blooms persist into October. Spent blooms may be removed (deadheaded) to encourage more flowers to emerge.

**New England aster** (*S. novae-angliae*) – will be in full bloom this month. Watch for visiting butterflies, bees and other pollinators.

**What to do this month:**

- Daily remove any competing weeds and unwanted sprouts that emerge this month.
- Water your garden once per week for one to two hours, preferably using a sprinkler or a soaker hose. This will encourage your plants to create deeper roots. As temperatures cool below 75 degrees, decrease water time.
- If aphids appear, spray them off with a hose or put on rubber gloves and remove them by hand. (They will not harm your bare hands, but they crush easily and will stain your skin a lovely shade of yellow.)
- Watch for monarch butterflies, caterpillars, milkweed bugs, milkweed beetles, honeybees, bumblebees, and other pollinators. You may also see Milkweed tussock caterpillars this month.
- Watch for birds such as goldfinches (males are bright yellow, females are a dusky green) and sparrows.
- Collect milkweed seeds.

**Observations this month:**
What to expect this month:

**Common milkweed** (*A. syriaca*) Pods will be mature and can be harvested if desired. Stems and leaves will go dormant, turn yellow and die back.

**Swamp milkweed** (*A. incarnata*) Pods will be mature and can be harvested if desired. Stems and leaves will go dormant, turn yellow and die back.

**Butterflyweed** (*A. tuberosa*) Pods will be mature and can be harvested if desired. Stems and leaves will go dormant, turn yellow and die back.

**Whorled milkweed** (*A. verticillata*) Pods will be mature and can be harvested if desired. Stems and leaves will go dormant, turn yellow and die back.

**Purple coneflower** (*E. purpurea*) Flower stems will dry out and fall apart. Some birds may still visit in search of seeds.

**Bee balm** (*M. spp.*) – Flowering cycle will end this month. Flower heads will dry out and wither.

**Goldenrod** (*S. drummondii*) – will complete its bloom cycle this month. Watch for bees, butterflies, beetles, flower flies and other pollinators.

**Black-eyed susan** (*R. fulgida*) – will complete its bloom cycle this month. Spent blooms may be removed (deadheaded) or left in place to provide seeds to visiting birds.

**New England aster** (*S. novae-angliae*) – will complete its bloom cycle this month. Watch for visiting butterflies, bees and other pollinators.

What to do this month:

- Daily remove any competing weeds and unwanted sprouts that emerge this month.
- Water your garden for one hour using a sprinkler or soaker hose if temperatures rise above 75 degrees. Otherwise, water for 30 minutes every other week.
- Watch for monarch butterflies and milkweed tussock caterpillars this month. However, most monarch butterflies will have migrated by this month.
- Watch for large yellow sulphur butterflies and skippers (small, dusky butterflies with hooked antennae).
- Watch for birds such as goldfinches (males are bright yellow, females are a dusky green) and sparrows.
- Milkweed and other native seeds may be planted during this time of year to sprout in the spring.

Observations this month:
NOVEMBER

What to expect this month:

Common milkweed (*A. syriaca*) Plant will be dormant this month. Do not remove standing stems.
Swamp milkweed (*A. incarnata*) Plant will be dormant this month. Do not remove standing stems.
Butterflyweed (*A. tuberosa*) Plant will be dormant this month. Do not remove standing stems.
Whorled milkweed (*A. verticillata*) Plant will be dormant this month. Do not remove standing stems.
Purple coneflower (*E. purpurea*) Plant will be dormant this month.
Bee balm (*M. spp.*) – Plant will be dormant this month.
Goldenrod (*S. drummondii*) – Plant will be dormant this month. Do not remove standing stems.
Black-eyed susan (*R. fulgida*) – Plant will be dormant this month.
New England aster (*S. novae-angliae*) – Plant will be dormant this month. Do not remove standing stems

What to do this month:

☐ Add 2” of mulch around plants before frost sets in. Leave any discarded foliage and leaves from trees in place.
☐ Watering should not be needed this month.
☐ Watch for birds such as goldfinches (males are bright yellow, females are a dusky green) and sparrows.
☐ If chrysalids (butterfly pupae), cocoons (moth pupae) or other soil organisms are found, DO NOT BRING THEM INSIDE. Many species overwinter in this state and depend on cold temperatures to develop properly. Instead, note their location and observe them throughout the winter.
☐ Milkweed and other native seeds may be planted during this time of year to sprout in the spring.
☐ Collected milkweed seeds may be stratified by placing them in a zip-top bag with moist peat moss, vermiculite or sand and storing them in a cold, dark place such as a refrigerator or outdoor shed. For additional information checkout [MBG: Native Propagation](#).

Observations this month:
DECEMBER

What to expect this month:

- **Common milkweed** (*A. syriaca*) Plant will be dormant this month. Do not remove standing stems.
- **Swamp milkweed** (*A. incarnata*) Plant will be dormant this month. Do not remove standing stems.
- **Butterflyweed** (*A. tuberosa*) Plant will be dormant this month. Do not remove standing stems.
- **Whorled milkweed** (*A. verticillata*) Plant will be dormant this month. Do not remove standing stems.
- **Purple coneflower** (*E. purpurea*) Plant will be dormant this month.
- **Bee balm** (*M. spp.*) – Plant will be dormant this month.
- **Goldenrod** (*S. drummondii*) – Plant will be dormant this month. Do not remove standing stems.
- **Black-eyed susan** (*R. fulgida*) – Plant will be dormant this month.
- **New England aster** (*S. novae-angliae*) – Plant will be dormant this month. Do not remove standing stems.

What to do this month:

- Leave snow, ice, or other precipitation on the ground around plants. There is no need to clear it away.
- Watering should not be needed this month.
- Watch for birds pecking on the ground for buried seeds. (Have kids create bird feeders during this time of year.)
- If chrysalids (butterfly pupae), cocoons (moth pupae) or other soil organisms are found, DO NOT BRING THEM INSIDE. Many species overwinter in this state and depend on cold temperatures to develop properly. Instead, note their location and observe them throughout the winter.

Observations this month:
JANUARY

What to expect this month:

Common milkweed (*A. syriaca*) Plant will be dormant this month. Do not remove standing stems.

Swamp milkweed (*A. incarnata*) Plant will be dormant this month. Do not remove standing stems.

Butterflyweed (*A. tuberosa*) Plant will be dormant this month. Do not remove standing stems.

Whorled milkweed (*A. verticillata*) Plant will be dormant this month. Do not remove standing stems.

Purple coneflower (*E. purpurea*) Plant will be dormant this month.

Bee balm (*M. spp.*) – Plant will be dormant this month.

Goldenrod (*S. drummondii*) – Plant will be dormant this month. Do not remove standing stems.

Black-eyed susan (*R. fulgida*) – Plant will be dormant this month.

New England aster (*S. novae-angliae*) – Plant will be dormant this month. Do not remove standing stems.

What to do this month:

☐ Leave snow, ice, or other precipitation on the ground around plants. There is no need to clear it away.

☐ Watering should not be needed this month.

☐ Watch for birds pecking on the ground for buried seeds. (A bird feeder is a great idea this time of year.)

☐ If chrysalids (butterfly pupae), cocoons (moth pupae) or other soil organisms are found, DO NOT BRING THEM INSIDE. Many species overwinter in this state and depend on cold temperatures to develop properly. Instead, note their location and observe them throughout the winter.

Observations this month:
FEBRUARY

What to expect this month:

**Common milkweed** (*A. syriaca*) Plant will be dormant this month. Do not remove standing stems.

**Swamp milkweed** (*A. incarnata*) Plant will be dormant this month. Do not remove standing stems.

**Butterflyweed** (*A. tuberosa*) Plant will be dormant this month. Do not remove standing stems.

**Whorled milkweed** (*A. verticillata*) Plant will be dormant this month. Do not remove standing stems.

**Purple coneflower** (*E. purpurea*) Plant will be dormant this month.

**Bee balm** (*M. spp.*) – Plant will be dormant this month.

**Goldenrod** (*S. drummondii*) – Plant will be dormant this month. Do not remove standing stems.

**Black-eyed susan** (*R. fulgida*) – Plant will be dormant this month.

**New England aster** (*S. novae-angliae*) – Plant will be dormant this month. Do not remove standing stems.

What to do this month:

- Leave snow, ice, or other precipitation on the ground around plants. There is no need to clear it away.
- Watering should not be needed this month.
- Watch for birds pecking on the ground for buried seeds. (A bird feeder is a great idea this time of year.)
- If chrysalids (butterfly pupae), cocoons (moth pupae) or other soil organisms are found, DO NOT BRING THEM INSIDE. Many species overwinter in this state and depend on cold temperatures to develop properly. Instead, note their location and observe them. Most will emerge in late March or early April.
- Stratified seeds may be started indoors toward the end of this month. Plant them in seedling trays and germinate them under a grow-light, keeping the soil moist. Note that some may take as long as six weeks to sprout.

Observations this month:
**MARCH**

**What to expect this month:**

- **Common milkweed** *(A. syriaca)* Plant will be dormant this month. Cut remaining standing stems at the base with scissors or shears.
- **Swamp milkweed** *(A. incarnata)* Plant will be dormant this month. Cut remaining standing stems at the base with scissors or shears.
- **Butterflyweed** *(A. tuberosa)* Plant will be dormant this month. Cut remaining standing stems at the base with scissors or shears.
- **Whorled milkweed** *(A. verticillata)* Plant will be dormant this month. Cut remaining standing stems at the base with scissors or shears.
- **Purple coneflower** *(E. purpurea)* Plant will be dormant this month.
- **Bee balm** *(M. spp.)* – Plant will be dormant this month.
- **Goldenrod** *(S. drummondii)* – Plant will be dormant this month. You may remove standing dry stems.
- **Black-eyed susan** *(R. fulgida)* – Plant will be dormant this month.
- **New England aster** *(S. novae-angliae)* – Plant will be dormant this month. You may remove standing dry stems.

**What to do this month:**

- Leave snow, ice, or other precipitation on the ground around plants. There is no need to clear it away.
- Remove any henbit or other early-season weeds that appear this month. You may cut down any standing stems from the previous season now, but, but use a scissors or garden shears and avoid pulling on them, especially if the ground is soft.
- Mulch around the base of your plants.
- Watering should not be needed this month unless temperatures are unseasonably warm.
- If chrysalids (butterfly pupae), cocoons (moth pupae) or other soil organisms are found, DO NOT BRING THEM INSIDE. Many species overwinter in this state and depend on cold temperatures to develop properly. Instead, note their location and observe them. Most will emerge in late March or early April.
- Take notice of early spring blooms around your school or neighborhood, like witch hazel, dandelion, clover, and redbud. Bees may become active this month once the danger of frost has past, and these flowers provide much-needed early sources of nectar to support these vital pollinators.
- Stratified seeds may be started outdoors once the danger of frost has passed. Plant them in seedling trays and keep them moist.
- Plugs may be planted in the garden toward the end of this month.

**Observations this month:**
APRIL

What to expect this month:

- **Common milkweed** (*A. syriaca*) Watch for new stems to emerge.
- **Swamp milkweed** (*A. incarnata*) Watch for new stems to emerge.
- **Butterflyweed** (*A. tuberosa*) Watch for new stems to emerge.
- **Whorled milkweed** (*A. verticillata*) Watch for new stems to emerge.
- **Purple coneflower** (*E. purpurea*) Foliage will begin to appear this month.
- **Bee balm** (*M. spp.*) – Foliage will begin to appear this month.
- **Goldenrod** (*S. drummondii*) – Foliage may begin to appear this month. This plant matures later than the others listed.
- **Black-eyed susan** (*R. fulgida*) – Foliage will begin to appear this month.
- **New England aster** (*S. novae-angliae*) – Foliage will begin to appear this month.

What to do this month:

- Pull any henbit or other early-season weeds that appear this month. Use a scissors to cut down any remaining dried stems from last season. (Avoid pulling!)
- There is no need to fertilize your garden. (Native plants typically get all necessary nutrients from Missouri soil without fertilizer support. That’s the beauty of a native garden.)
- Watering your garden if a week passes with no rain. Use a sprinkler or a soaker hose for 1 hour.
- Watch for early spring butterflies, notably swallowtails and sulphurs.
- Watch for soil organism activity, especially pillbugs and earthworms.
- Remove slugs and snails if they appear in your garden.
- Watch for spring blooms in the community, such as dandelion, clover, phlox, and violets. Bees will be active this month.
- Seedling plugs may be planted in the garden at this time.

Observations this month:
MAY

What to expect this month:

**Common milkweed** (*A. syriaca*) Stems will lengthen this month and foliage will appear. Watch for leaning stems and prop them up with a stake and some twine if needed.

**Swamp milkweed** (*A. incarnata*) Stems will lengthen and thicken this month. Watch for leaning stems and prop them up with a stake and some twine if needed.

**Butterflyweed** (*A. tuberosa*) Stems will lengthen and leaves will appear.

**Whorled milkweed** (*A. verticillata*) Stems will lengthen and thicken this month. Watch for leaning stems and prop them up with a stake and some twine if needed.

**Purple coneflower** (*E. purpurea*) Foliage will continue to appear this month. Leaves will spread.

**Bee balm** (*M. spp.*) – Stems will lengthen. Watch for leaning stems and prop them up with a stake and some twine if needed.

**Goldenrod** (*S. drummondii*) – Foliage may begin to appear this month. This plant matures later than the others listed.

**Black-eyed susan** (*R. fulgida*) – Foliage will continue to appear this month. Leaves will spread.

**New England aster** (*S. novae-angliae*) – Foliage will continue to appear this month. Leaves will spread. This plant puts out abundant basal leaves, so you may wish to trim foliage back if it spreads too broadly.

What to do this month:

- Resume daily weeding this month. If you permitted your plants to go to seed, you may want to wait until emerging plants put out several leaves before removing them so that they can be identified.
- There is no need to fertilize your garden. (Native plants typically get all necessary nutrients from Missouri soil without fertilizer support. That’s the beauty of a native garden.)
- Watering your garden if a week passes with no rain. Use a sprinkler or a soaker hose for 1 hour.
- Watch for butterflies, notably swallowtails and sulphurs.
- Watch for soil organism activity, especially pillbugs and earthworms.
- Remove slugs and snails if they appear in your garden.
- Watch for spring blooms in the community, such as dandelion, clover, phlox, and violets. Bees will be active this month.
- Seedling plugs and young plants may be planted in the garden at this time.

Observations this month:
JUNE

What to expect this month:

Common milkweed (*A. syriaca*) Flower heads will appear. Watch for visiting pollinators.

Swamp milkweed (*A. incarnata*) Foliage will continue to thicken this month. Watch for leaning stems and prop them up with a stake and some twine if needed.

Butterflyweed (*A. tuberosa*) Flower heads will appear. Watch for visiting pollinators.

Whorled milkweed (*A. verticillata*) Flower heads will appear. Watch for visiting pollinators.

Purple coneflower (*E. purpurea*) The first flowerheads will appear. Watch for visiting pollinators.

Bee balm (*M. spp.*) – Early blooms may appear, but the majority of species do not flower until July.

Goldenrod (*S. drummondii*) – Stems will elongate and foliage will appear. Goldenrod typically looks ‘weedy’ at this stage.

Black-eyed susan (*R. fulgida*) – The first flowerheads may appear. Watch for visiting pollinators.

New England aster (*S. novae-angliae*) – Foliage will continue to appear this month. Leaves will spread. This plant puts out abundant basal leaves, so you may wish to trim foliage back if it spreads too broadly.

What to do this month:

- Remove competing weeds and unwanted sprouts daily. If you permitted your plants to go to seed, you may want to wait until emerging plants put out several leaves before removing them so that they can be identified.

- Water garden weekly with a sprinkler or a soaking hose. Water for 1 hour (or more, if the temperatures are unusually warm.)

- Watch for butterflies, bees, beetles, and flower flies. Milkweed aphids may appear this month.

- Remove slugs and snails if they appear in your garden.

- Watch for ladybugs and mantids, which may be hunting for insects. Do not remove them; they do more good than harm.

- Young plants may be added to the garden at this time. Be sure to water new plantings well and often.

Observations this month:
What to expect this month:

Common milkweed (*A. syriaca*) Flowers will be in full bloom this month. Watch for visiting pollinators and early monarch caterpillars.

Swamp milkweed (*A. incarnata*) Flower heads may appear this month. Watch for visiting pollinators and early monarch caterpillars.

Butterflyweed (*A. tuberosa*) Flowers will be in full bloom this month. Watch for visiting pollinators and early monarch caterpillars.

Whorled milkweed (*A. verticillata*) Flowers will be in full bloom this month. Watch for visiting pollinators and early monarch caterpillars.

Purple coneflower (*E. purpurea*) Flowers will be in full bloom this month. Watch for visiting pollinators.

Bee balm (*M. spp.*) – Flower heads will appear and begin to bloom. Watch for visiting bees.

Goldenrod (*S. drummondii*) – Flower heads may appear this month.

Black-eyed susan (*R. fulgida*) – Flowers will bloom this month. Watch for visiting pollinators.

New England aster (*S. novae-angliae*) – Foliage will continue to appear this month. Leaves will spread. This plant puts out abundant basal leaves, so you may wish to trim foliage back if it spreads too broadly.

What to do this month:

- Remove competing weeds and unwanted sprouts daily. If you permitted your plants to go to seed, you may want to wait until emerging plants put out several leaves before removing them so that they can be identified.

- Water garden weekly with a sprinkler or a soaking hose. Water for 1-2 hours. During unusually warm weeks, water twice.

- Watch for butterflies, bees, beetles, and flower flies. Milkweed aphids may appear this month. Aphids can be removed by hand or with a strong blast of water from a hose. There is no need to remove other insects or other invertebrates except snails and slugs.

- Watch for ladybugs and mantids, which may be hunting for insects. Do not remove them; they do more good than harm.

Observations this month:
Hand’s-on = Inspired minds
Gene Slay Boys & Girls Club

On September 19, 2016, the City’s Milkweeds for Monarchs team partnered with the Gene Slay Girls & Boys Club (GSGBC) to install a monarch garden as part of its Outdoor Learning Center. The mission of Gene Slay’s is to “empower girls and boys in the St. Louis metropolitan area, especially those who need us most, to realize their physical, intellectual, and emotional potential.” As stated in their literature, “Initially a recreation center and safe haven, GSGBC continues to meet the needs of the changing demographics through program enhancement. GSGBC provides high quality and holistic programs that respect and meet the needs of at-risk youth through academics, leadership building, health, athletics, and the arts.” By partnering with GSGBC, Milkweeds for Monarchs provides an additional program and educational opportunity that teaches environmental stewardship and its connection to healthy lifestyles.

On the day of our installation, a group of approximately 16 students from the after-school program, ranging from elementary to high school, participated in the garden creation. To maximize the impact and learning experience for the Club, the students learned about the life cycle and migration of the monarch butterfly, as well as the importance of pollinator conservation.

The Milkweeds for Monarchs team also brought live monarch caterpillars for the students to view and hold. Most of the students had never seen a monarch caterpillar, and none had ever held one. The students then planted approximately 40 milkweed and nectar-producing plants in two raised beds in the Outdoor Learning Center, supported through a partnership with Gateway Greening. While planting, one especially enthusiastic student told the Milkweeds for Monarchs team, “Wow you guys have the best jobs ever! I want to do this when I grow up!”

For many of the students, the opportunity to put their hands in the dirt, plant a garden, and learn about the benefits of monarchs and pollinators was an eye-opening experience. Through Milkweeds for Monarchs, children who are considered “at-risk” now have the experience, knowledge, and opportunity to someday be future conservation leaders.
Throughout this project, we’ve heard, witnessed, and experienced many challenges. Creating these gardens is one challenge, but maintaining them in ways that enable them to thrive for years to come is another. Here are the “Top 10” most common challenges, paired with creative solutions that benefit all:

1. “Parents don’t want their kids to get their clothes and shoes dirty.”
   Childhood wouldn’t be childhood without a bunch of dirty clothes, shoes, hands, feet, and faces, right? Fully embrace this trait of childhood, and invite your students’ families to do the same. At the start of the year, be sure to communicate clearly with families your school’s philosophy on this front. Perhaps consider investing in several pairs of mudboots in various sizes, and keep them neatly stored right at the entrance to outside. During family nights at your school, offer student-led tours of your garden, and enable families to get their hands dirty too. You’ll start a trend!

2. “Our grounds crew mowed over our garden.”
   Ouch, we feel your pain, and you are not alone. If it makes you feel better, this isn’t that uncommon. However, to stop the cycle, find the face. Seek out the actual person or persons operating that equipment and give them a personal, student-led tour of your monarch garden. Have the students themselves show off and describe what that garden is and why it’s important. And then be sure there is a visible sign demarking the garden’s perimeter on your campus.

3. “My class time is too jam-packed. I don’t have time to take the kids outside for a lesson.”
   Challenge yourself to do that lesson outside then. Even if you’re new to nature-based learning, simply moving your class activity outside can be a first step. Try it for a week or a month, and experiment with different times of day, but just try it. When you get more comfortable, try weaving nearby nature into your existing math, language arts, and science lessons. Outdoors is not just for recess. It can be the most extraordinary, wonder-filled classroom you ever dreamed of, if you let it.

4. “I have no idea if what’s coming up are weeds or plants we need to keep.”
   Ah, we hear you. Us too. Really. Even expert botanists who spend their whole life studying plants often scratch their head when it comes to identifying baby perennial plants re-emerging in the spring. A simple trick: Loosely tie a colored strip of cloth or plastic around the stem bases of your native plants when they’re grown and identifiable. Then when you end up cutting back the spent foliage the next spring to get ready you’ll have a quick visible guide to where everything should be reemerging from. Even then, wait a little while before weeding too soon, as some of your garden’s intended plants may have naturally spread.

5. “My kids get freaked out by bees and other buzzing insects. Actually, so do I.”
   You are not alone. Working outside around a healthy monarch garden will mean that you’ll be joined by a host of flying insects of various sizes, shapes, and sounds. If you’re not used to this, it may be challenging at first. But trust us, the more you spend outside getting to know these insects, observing them, photographing them, and learning why they’re there, you’ll start to “desensitize” yourself to the buzzing. Really, you will. Turn it into a game for you and your students, and even graph how your self-assessed “freak out” levels change over time. See, we even worked in graphing on this one!
6. “We have absolutely no grass in which to plant a garden.”
   No worries. Raised beds or containers on concrete can also serve as important urban habitat for monarchs, pollinators, and other wildlife. For either a raised bed or container, be sure to use good quality garden soil and create a depth of a foot or more to give roots room. Given these are contained plantings, you’ll need to water them more often to prevent them from drying out.

7. “Someone complained our garden looks overgrown and messy.”
   Overgrown and messy to human eye’s may be paradise to a monarch. Yes, native plants, as well as all life on Earth, go through seasonal cycles of life. In the fall, many of your plants will look brown and spent. Resist the urge to cut down these spent stalks, as many of them feature seed heads packed with nutrient-dense seeds for birds. Many insects will overwinter in the stalks, niches, and nooks of your “messy” garden. If aesthetics remain a concern, maintain a nice crisp edge to your garden’s perimeter, but otherwise let it be until springtime rolls around. A colorful sign indicating “Wildlife Garden at Work” will help convey to passers-by that this is a planned space with a purpose, not an overgrown patch.

8. “Our school isn’t in session during summer, so there’s no one around to care for the garden.”
   Native monarch gardens in their third or fourth year should fare pretty well on their own in summer months, assuming adequate rainfall. However, newly planted gardens do require a bit of tender loving care and attention to successfully establish. Before summer break, create a week-by-week garden calendar and post it in a high-profile hallway. Invite both teachers and students’ families to sign up to be monarch gardeners for a week, and create a garden log for them to document their activities and observations. For additional assistance, reach out to community groups and other organizations for summer care. In the city of St. Louis, check with your NIS office for suggestions on neighborhood/community partnerships.

9. “My students want to bring the caterpillar indoors to watch it grow. Should I do that?”
   Well, it’s always a good rule of thumb to let nature do its thing, however, it can be incredibly awe-inspiring to witness first hand a monarch’s metamorphosis. For those interested in caring for caterpillars in the classroom or at home, try to transfer the caterpillar as carefully as you can from its host outdoor plant (keep it on its leaf if you can) to an indoor caterpillar cage. Be sure to provide the caterpillar with fresh milkweed leaves every day, and eventually it should pupate. Upon emergence, allow the butterfly’s wings to dry, but ensure it is released within the next 12 hours or so to find food, and send it on its migratory way.

   **Note:** if you find a chrysalis in late fall or during the winter, **DO NOT BRING IT INDOORS.** Many insects overwinter as pupae, and unexpected warmth will encourage them to emerge too soon. Find a sheltered place outdoors to place it where you can observe it until spring.

10. “We tried saving seed from our garden to grow again and none of them came up.”
    We applaud you for trying! Saving and storing seeds for eventual germination is sometimes tricky business. Different species require different conditions in order for germination to occur. Try again, but this time, reference this handy cheat sheet of native seed propagation methods [MBG: Native Seed Propagation](#).
Complying with city ordinances
The City of St. Louis Health Department regulations state that no toxic or dangerous plants may be accessible to children. Milkweed will only be considered a public nuisance if it is unattended and determined to be unsightly by the Commissioner of Forestry. Steps educators can take to ensure their monarch gardens comply with Health Department regulations and that play areas are safe for children include:

• Clearly mark your garden to indicate that it was intentionally planted for educational purposes. Be sure to also communicate your efforts with all faculty and staff at your school, so they are aware of the garden;

• Mark or label the plants present in the garden. This will ensure every educator at your facility can identify the plants located within the garden. These labels can be as simple as painted rocks or popsicle sticks, or more formal markers can be purchased at most garden centers;

• Register your garden on www.stlouis-mo.gov/monarchs to guarantee the City is aware of any newly planted Milkweeds for Monarchs gardens at educational facilities.

As milkweed is listed as a noxious weed, the Health Department recommends that: (1) caregivers must be able to identify all plants in the child care space, as stated in the ordinance; and (2) if children have access to outdoor poisonous or dangerous plants, an adult shall supervise the children at all times, according to a state-wide regulation.
Making cultural connections
St. Cecelia School and Academy

St. Cecilia students planting their raised bed M4M garden.

The mission of this parish is directed to the care of local Hispanics. The teacher workshop inspired a weekly after-school enrichment program for K-3 graders. Students studied mariposa (butterflies), migration, and took care of the garden. The butterflies need to travel long distances for long periods of time is like the experience of our children’s families,” said school business manager Kacie Brennell. When the teacher needed to be on maternity leave, the Zoo was asked to step in and complete the last 13 weeks. With little green space and a blacktop parking lot that met needs for daily parking, recess, and physical education activities, the most protected corner of the parking lot, on top of the blacktop, was chosen to “protect” the garden. Lots of shade and frequent soccer balls slowed the spring regrowth, but it finally came. Changes in leadership and staff has also been a hurdle. The kids’ smiles and sense of wonder, priceless!

Fourth time’s the charm
Sacred Heart Villa

This Catholic preschool in the heart of St. Louis’s famous neighborhood affectionately known as “The Hill” may win the award for most struggles in getting and keeping a monarch garden. Three times the school had installed a monarch garden, even complete with signage, and three times the garden was mowed down by their contracted grounds crew.

“Well, we learned lots of lessons about perseverance, and the importance of overcoming setbacks, and of course, the importance of clear communications,” said Kris Doder, the school’s director. Since initial setbacks, the school has kept at it, adding monarch-attracting plants throughout their school campus and expanding their nature-inspired efforts in other ways as well, recently earning national certification as a Nature Explore classroom.

A Sacred Heart Villa student loves getting her hands dirty as she helps her fellow classmates and teachers bring more biodiversity to her schoolyard.
IV. USE & ENJOY

Once established, your native garden represents an invaluable tool that will enable you and your students to:

- Experience firsthand and discuss content described in the Missouri Learning Standards for Science under LS1, LS2, and LS3 at all grade levels.
- Develop and practice STEM-appropriate skills, such as observation, data collection and data analysis.
- Incorporate literacy skills, such as research, note-taking and descriptive and persuasive writing.
- Develop a sense of stewardship and responsibility for the space, as well as early hands-on vocational skills in horticulture and land management.

The first step toward using your garden effectively with your students is to identify ways to incorporate it into your existing plans and curriculum. In this section, we have included a simple guide, designed to lay out your year’s curriculum plans by academic quarter and identify opportunities in those plans where the garden might be incorporated. Identifying simple adaptations that make use of the space will help you curate lesson ideas and strategies that will enable you and your students to learn from your garden.

Lesson plans

A number of organizations make a wide variety of monarch-centered lesson plans available to teachers free of charge. In particular, we recommend the following:

- **Monarch Butterfly Teacher and Student Resources**
  The U.S. Fish and Wildlife Service and Protección de la Fauna Mexicana A.C. (Profauna A.C.), a Mexican non-governmental organization, developed *The Monarch Butterfly Manual, Royal Mail: A Manual for the Environmental Educator*. This manual was developed for grades Pre-K through 12 and offers activities that promote conservation of the Monarch butterfly. Each activity includes an overview, background information, and a sidebar that highlights the skills and concepts students will use, along with the learning objectives they will meet. You can download the entire guide, or each individual activity.

- **Monarch Lab**
  A project of the University of Minnesota, Monarch Lab offers a nice variety of lesson plans at all levels that are available for free download. The full curriculum can also be purchased online.

- **Journey North**
  Part citizen science effort, part educational resource, Journey North focuses on migrations and wildlife phenology. They offer a variety of activity suggestions broken out by season to enable educators to make use of their schoolyard gardens throughout the year.
Year-Long Lesson Plan

Use the following pages to reflect upon the content you plan to address with students during the coming school year. Record subject areas and content topics in the blocks provided, and then identify possible opportunities within each quarter to tie in content you’ve learned.

<table>
<thead>
<tr>
<th>Curriculum Areas</th>
<th>Content Topics Covered</th>
<th>Tie-in Opportunities</th>
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<tbody>
<tr>
<td>Math</td>
<td>Addition + Subtraction, Number Sequence, Place Value, Measure Lengths, Shape + Attributes, Data</td>
<td>Wildflower Stems, Leaves, Leaf Shapes, Counting/Tracking Butterflies</td>
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<td>Writing in Event order, Summary Sentences, Capitalization + Punctuation, Categorization</td>
<td>&quot;Story of a Butterfly&quot; Book for Event Sequencing</td>
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<td>Forces + Motion, Exploratory</td>
<td>Push/Pull Wings Activity</td>
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<td>Norms + Rules (Citizenship), Diversity (Culture), Folklore + Celebrations (History), Neighborhoods/Communities (Geography)</td>
<td>Rules for Butterfly Garden, Butterflies as cultural symbols? Neighborhood Walk</td>
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<td></td>
<td>Food + Diet, Relationships</td>
<td>Pollination Ecology? Tie in to food production?</td>
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<td></td>
<td>Art/Music, Colors/Color Mixing, Patterns, Scales</td>
<td>Wax Paper Butterflies? Camouflage Caterpillars</td>
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By mid-Oct, most flowers will have gone to seed.

“As part of the children’s garden at our school, the monarch garden is visited by the children during regular “garden class” time as well as during on-site field trips. The teachers have incorporated lessons specific to the life cycle of the butterfly, discovering the insects that live on the plants, and comparing the different types of plants in the garden.”

~ Teacher
Quarter 1 (Dates _________________)

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Notes:
Citizen science
Teachers and community leaders alike are encouraged to consider promoting citizen science efforts among students and residents. These efforts not only motivate participants to observe and appreciate the garden and its inhabitants, but also assist scientists investigating the effects of seasonal weather variations and environmental factors on the life cycles of plants and animals around the world.

Consider taking part in one of the following citizen science opportunities with your class or community:

**Monarch Watch**
Raise monarchs in the classroom, have your garden certified as a Monarch Waystation, and even participate in monarch tagging. Educational resources provided.

[www.monarchwatch.org](http://www.monarchwatch.org)

**Project BudBurst**
Report the life cycle stages of your garden’s wildflowers. Lesson plans and other materials provided.

[www.budburst.org](http://www.budburst.org)

**Journey North**
Report sightings of monarch butterflies and other local wildlife. Lesson plans and other materials provided.

[www.learner.org/jnorth](http://www.learner.org/jnorth)

**Project Noah**
Upload photographs of plants, insects, birds and other visitors to your garden. Lesson plans and other materials provided.

[www.projectnoah.org](http://www.projectnoah.org)

[www.inaturalist.org](http://www.inaturalist.org)
The following Resources from the Saint Louis Zoo Library and Teacher Resource Center include puppets, insect viewers, field guides, models, story books, curriculum guides, and more and can be checked out to bring to your classroom!

**Relevant Kits:**
- Monarch butterflies
- Backyard wildlife
- Insects
- Be a nature detective
- Bug lay
- Insect puppet pack
- Pollinators

If you need to borrow garden tools, such as shovels, rakes, gloves, and trowels, contact the Missouri Botanical Garden Education team at 314-577-5185 or at schoolprograms@mobot.org. The Education Division maintains a supply of these tools that may checked out by teachers and schools pending availability.

**Family engagement opportunities**
Your garden is a great catalyst for building a stronger sense of community. Family members who might not want to volunteer in the classroom might feel more comfortable helping in the garden. The garden is also a place where families can meet, work together, share common experiences, and gain inspiration from each other. Here are a few tips for leveraging your garden to strengthen family engagement:

- Survey families to see if there are any experienced gardeners in their close or extended family that might like to be a resource.
- Have families help clean out dead plants and spread mulch to prepare your garden.
- Have a weekly weed pulling time where anyone can stop by and help spruce up the garden.
- Have students start native seeds inside and host a planting party to add them to the garden.
- Have families sign up for weeding shifts throughout the summer to help maintain the garden.
- Have families join in seed collection day. Seeds can be started inside over the winter.
- Encourage families to create and care for a monarch garden at home, and see how many of these gardens your school could inspire by sending home seeds collected, sharing resources of where to get plants, etc.

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**Plant it, and they will come**

The Biome School

This new charter school, located in the heart of the Central West End, added a raised bed monarch garden to their existing multiple bed vegetable garden. The gardens shared space on the lot adjacent to the school which had been transformed into outdoor play space for students. The biggest change made happened the first summer. All the beds were moved to the back of the lot to create a larger “free play” space. Monarchs found the garden the following fall. Also that fall, in partnership with the Zoo, weekly after-school Zoo Clubs were launched. Exploring the gardens has become a weekly event leading to bug and life cycle studies. Participating in Journey North’s Symbolic Migration was another highlight.

“There is so much more that can be learned from the garden than growing plants. It was almost magical to see caterpillars grow and change eventually to a monarch. It was a first for just about all of us.” Galicia Guerrero, Out of School Time Program Manager

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“It was really neat to see monarchs come by! And to be a part of a community that values the natural presence of monarchs in the city.”

~ Teacher

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Students having fun getting their hands dirty
V. GROW & EXPAND

Enhancement and expansion of existing gardens to help establish wildlife corridors

Your Milkweed for Monarchs garden is a great way to attract monarch butterflies and other pollinators to your area, but it doesn’t have to be the end of your helping wildlife. There are many simple ways to enhance your garden and attract even more wildlife. By adding a water source, additional plants that provide shelter, a bird house or other place for animals to raise their young, you have all the elements of a good wildlife habitat. The following resources provide more information about enhancing your garden, and even how to have it certified as a wildlife habitat.

- Learn to attract wildlife to your schoolyard and receive the National Wildlife Federation Certification.
- Learn the importance of sustainability and gardening for wildlife, with this step by step resource.
- More information about caring for and expanding your monarch garden.
- Explore garden tips and monarch curriculum in this extensive resource.
- FWS schoolyard habitat project guide

Community asset mapping and engagement/partnership opportunities

The term ‘asset map’ is applied to any pictorial representation of the resources and opportunities that are available to a given entity at any given time. The asset map may be a literal map displaying the locations of various assets, or may be more abstract and resemble a thought web, comprising a series of connected shapes illustrating how assets are grouped and linked around a common idea.

Drawing an asset map of your school community can be a valuable exercise. In addition to giving teachers and administrators a bird’s-eye perspective on your school’s immediate surroundings, geography, and community, drawing an asset map can create an inventory of available resources. Local businesses, public libraries, government officials, and community groups can all serve as valuable partners and sources of support.
Drawing your Community Asset Map:

- Visit an online map site such as Google Maps, Bing Maps, Yahoo Maps, or MapQuest and search for your school’s address, and zoom out enough to view the neighborhood that surrounds your school. Press “Alt+Print Screen” (or use the Preview app, if you are using a Mac computer) to take a screen capture and paste (control-V) the image into a Word document or similar application.
- If you already have a Milkweeds for Monarchs school garden, mark its approximate location on your map. (You might also visit the Milkweeds for Monarchs website and scan the map for other monarch gardens installed nearby.)
- Indicate N-S-E-W direction on your map and note the scale.
- Label residential areas, commercial areas, industrial areas, and green space areas such as city parks, community gardens, or other areas.
- Make note of community centers, faith communities, and other civic groups active in your school’s neighborhood. If appropriate, note the neighborhood’s association website and/or contact information.
- Indicate political boundaries, such as Wards, Neighborhoods and Police Districts. Note the name of your Alderperson, your Neighborhood Improvement Specialist, and your Police Chief.
- If possible, locate the stream nearest your community and mark its location on your map.

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<td>2</td>
<td>Word @ Shaw</td>
<td>Parking, Literacy Night</td>
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<td>3</td>
<td>Rigazzi’s</td>
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<tr>
<td>Ward</td>
<td>8</td>
<td>Alderman</td>
<td>Steve Conway (314) 622-3287</td>
</tr>
<tr>
<td>Police District</td>
<td>2</td>
<td>PD Captain</td>
<td>Captain Michael Beeba, (314) 444-0100</td>
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<td>Mo Rep Dist.</td>
<td>8D</td>
<td>State Rep</td>
<td>Peter Merideth</td>
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<td>Mo Senate Dist.</td>
<td>5</td>
<td>State Sen</td>
<td>Janilah Nasheed</td>
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When you have completed your map, consider the following questions:

- What aspects of our school’s history and the history of the neighborhood are evident in the surrounding community?
- Could any local businesses or organizations be approached to partner with the school for schoolyard projects and development?
- What nearby green space might be tapped for students and teachers to visit and use?
- How many of the students in the school live in the surrounding neighborhood?
- Is there a garden club, 4-H club, or similarly-themed club nearby that might assist with schoolyard development and maintenance during school vacations?
- How can the school itself provide support for the surrounding community, either through STEAM-type action projects, service hours, or provision of services (meeting rooms, etc.)?

Grants and other funding/resource opportunities

- Wild Ones | Native Landscaping Grants
- Missouri Prairie Foundation | Prairie Gardens Small Grants Program
- Monarch Joint Venture | FFA Monarch Garden Grants
- Monarch Watch | free milkweed plants
- Project Learning Tree | Greenworks Grants
- The Pollination Project | Seed Grants
- National Gardening Association | Youth Garden Grants
- Association for Butterflies | Butterfly Mini-Grants
- Captain Planet Foundation | Small Grants Program

Turning problems into opportunities

Carondelet Head Start

While operating out of a truly historic building (in this case, the Carondelet School constructed in 1871) can be an inspiring connection to St. Louis’ past, doing so also affords certain challenges. In the case of the Carondelet location of the Grace Hill Head Start program, one of the most troubling challenges has been lead. Like many older structures in our city, the school building’s interior, window frames, and door sills had been coated in many decades’ worth of lead-based paint, which not only created a hazard inside the school, but also creates concerns outdoors as well. As this paint has flaked off between coats, the lead has accumulated in the surrounding soil, making much of the schoolyard unsafe for children.

The interior concerns were addressed through encapsulation, but lead in soil is a tougher problem to solve. A safe playground space was created by layering safety surface over the soil, but such a surface does not lend itself to nature exploration. Even though corner beds were planted with monarch-supporting plants, they could only afford a limited amount of engagement with students.

The Carondelet Head Start teachers found their solution by looking outward into their community. Carondelet Lions Park, located across Davis Street from the old Carondelet School building, has become a popular place for the Head Start teachers to take students on sunny days. They arranged a meeting with the St. Louis Parks Department to ask about the possibility of creating a monarch garden there, and permission was granted! The garden, installed in fall of 2016, will be tended by the Head Start students and teachers, and is hoped to provide many opportunities for students to observe butterflies and caterpillars firsthand in the coming years.
What is Neighbors Naturescaping?

A program offered by Brightside St. Louis to help neighborhood groups enhance their community by planting native gardens in public spaces.

What are the benefits of Neighbors Naturescaping?

- Beautify a public space in your neighborhood
- Restore Missouri native plant communities
- Attract beneficial wildlife, such as butterflies, bees and birds
- Reduce storm water runoff and protect our drinking water

Eligible Groups

Neighborhood associations, community groups, block units, non-profits and school groups located in St. Louis city

Eligible Planting Locations

Medians, neighborhood entrances, parks, street barricades, tree lawns, vacant LRA lots and other public spaces approved by Brightside and must be located in St. Louis city

Locations NOT Eligible

Privately-owned properties and locations outside of the St. Louis city limits

Request up to $1,500 for...

~ Perennials ~ Grasses ~ Shrubs ~
~ Flower Bulbs ~ Trees ~ Hoses ~
~ Garden Edging ~ Shovels ~ Rakes ~
~ Other Supplies ~

Eligible expenses include Missouri native plants selected from our recommended plant list, plus hardscape materials and gardening tools from Home Depot.

Contact Brightside St. Louis

www.brightsidesl.org
314.772.4646
info@brightsidestl.org
4646 Shenandoah Avenue, 63110

Sincere Thanks to our Sponsors

Philpott Family Foundation

This activity is financed in part through an allocation of Community Development Block Grant funds from the Department of Housing and Urban Development and the City of St. Louis’ Community Development Administration.
VI. Selected Readings and Resources

The resources listed below have been curated by a team of educators and scientists at Missouri Botanical Garden and the Saint Louis Zoo. We encourage you to explore the resources of most interest/relevance to you and your community.

**Lesson plans and Curriculum resources:**
- Monarch Lab
- USDA Forest Service: Monarch Butterfly Teacher and Student Resources
- NRPA: Parks for Monarch Conservation Guide
- Monarch Joint Venture
- Monarch Lab (University of Minnesota Extension)
- Flight of the Butterflies Movie
- NWF’s Visual Journey through Monarch Life Cycle

**Citizen science:**
- Monarch Watch
- Journey North
- Monarch Larva Monitoring Project
- Monarch Net
- Project Budburst
- Project Noah
- iNaturalist
- Monarch Butterfly Conservation Webinar

**Field guides and other books:**
- Golden Guides
  - Butterflies and Moths
  - Insects
  - Weeds
  - Flowers
- Peterson’s Guides
  - Wildflowers
  - Insects
  - Moths
  - Butterflies
- Kaufman Field Guides
  - Butterflies
  - Insects
Selected Readings and Resources (cont.)

• Additional Guides and Books
  Milkweed, Monarchs and More, A Field Guide to the Invertebrate Community in the Milkweed Patch, by Karen Oberhauser et. al
  Missouri Wildflowers: A Field Guide to the Wildflowers of Missouri, by Edgar Denison
  Tried and True Missouri Native Plants for your Yard, by the Missouri Department of Conservation
  Ozark Wildflowers, by Don Kurz

Milkweed and other Pollinating Plant Recourses

• Growing Milkweed
  Monarch Watch: Growing Milkweed
  Collecting and Growing Milkweed
  Milkweed: A Conservation Practitioner’s Guide
  Germinating milkweed from seed

• Milkweed Identification
  Identification of Milkweeds
  Monarch Watch Milkweed Photo Guide
  Milkweed Identification Guide
  Native Milkweeds - The Xerces Society

• Other Pollinating Plant Identification
  Seedling ID Guide for Native Prairie Plants

• Purchasing
  Milkweed Seed Finder
  Grow Native
  Live Monarchs

Create or Maintain a Butterfly Garden

  21 Tips for Starting (or Improving) a School Butterfly Garden
  Natural Planet: Butterfly Gardening Guide
  A Guide to growing a School Butterfly Garden
  Video: Start Your School Pollinator Garden

Local websites and online resources

  Biodiverse City St. Louis

• Brightside St. Louis:
  Neighbors Naturescaping
  In Your Yard Practices

• City of St. Louis:
  Milkweeds for Monarchs: The St. Louis Butterfly Project
  10 Ways to Promote Sustainability in Schools
  Sustainable Neighborhoods Initiative
Selected Readings and Resources (cont.)

City of Saint Louis Sustainable Yard Management Tips:
- City of Saint Louis: Sustainable Neighborhoods
- City of Saint Louis: Backyard Tips
- Greenscape Gardens: Hummingbird Gardens

Missouri Botanical Garden:
- Native Missouri Milkweeds
- Kemper Center for Home Gardening
- Litzsinger Road Ecology Center: Schoolyards as Habitats

Saint Louis Zoo
- Saint Louis Zoo Education Programs and Teacher Resources
- Saint Louis Zoo: Guide to Beneficial Pollinators
- Saint Louis Zoo - Do It Yourself Conservation on Beneficial Pollinators
- Saint Louis Zoo: Build Your Own Bee Condo

Missouri Department of Conservation:
- Discover Nature School Programs
- Classroom Resources

Shaw Nature Reserve:
- Nature Explore Classroom Ideas
- Native Plant School

Pollinator gardening:
- Grow Native! Top 10 Plants for Pollinators
- Pollinator Partnership Guides
- Grow Native! Easy Landscape Plan: Butterfly Berm
- Grow Native! Native Nectar Plants for Butterflies

Wildlife homes & feeders:
- MO Dept. Conservation: Backyard Birding & Feeding
- Nest Box Dimensions Chart from “Woodworking for Wildlife” (Carrol Henderson)
- Tips on Birding in St. Louis area from Webster Groves Nature Study Society
- St. Louis Audubon, Nest Box Install & Monitoring
- St. Louis Audubon: Important Bird Areas
Selected Readings and Resources (cont.)

Forest Park Forever: Bird Watching Programs

Trees/woodlands/forests:
- MDC, Trees Work
- MDC, Your Trees Your Woods

MDC, Backyard Tree Care
- MDC, Mulch: Your Tree’s Best Friend
- University of Missouri, Extension: Home Propagation of Woody Plants
- Missouri Botanical Garden: Native Trees for MO Landscapes
- Greenscape Gardens, Tree & Shrub Tips
- Deer Creek Watershed Alliance, Benefits of Urban Trees
- Forest Releaf of Missouri: Project CommuniTree

Prairies/meadows:
- MDC, Improve your Property: Prairies, Grasslands & Fields
- Missouri Prairie Foundation: Prairie Management
- Missouri Prairie Foundation: Restoration & Reconstruction
- Forest Park Forever, Wildflower Walks