



# Pollinator Toolkit

A practical guide to improving and protecting biodiversity through the creation of locally appropriate pollinator habitat



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## *About WHC*

Wildlife Habitat Council (WHC) promotes and certifies habitat conservation and management on corporate lands through partnerships and education. WHC is committed to building partnerships with corporations and conservation groups to create solutions that balance the demands of economic growth with the requirements of a healthy, diverse, and sustainable environment.

## *About the Suppliers Partnership for the Environment*

The Suppliers Partnership for the Environment (SP) provides a forum for global automotive manufacturers, their large and small suppliers, and government entities from around the world to work together to improve the environmental sustainability and business value of the global automotive supply chain.

SP members have been encouraged to join a growing movement of corporate citizens supporting pollinator conservation. To support this challenge, WHC and the Suppliers Partnership for the Environment recently expanded their collaboration by signing a Memorandum of Understanding (MOU). As part of the agreement, SP members interested in supporting biodiversity activities at their facilities benefit from WHC's conservation support and guidance to design, implement, and maintain practical, successful, and sustainable conservation programs.

This toolkit, accompanied by quarterly webinars, is intended for use by SP members, their employees, and community partners. It provides practical information to support pollinator communities with a garden or a grassland habitat enhancement activity. The suggested model of engagement is adapted to the opportunities and constraints of the corporate reality and is designed to support a wide range of biodiversity and business objectives, from social license to operate to sustainability reporting.

SP members interested in conservation beyond pollinators are encouraged to contact WHC to discuss many more opportunities to embrace biodiversity and conservation education.



## Part One: Getting Started | Designing a Successful Conservation Program

Pursuing meaningful conservation by implementing biodiversity projects does not require large expanses of land, stringent policies, or protection assurances. Locally relevant contributions for species and their habitats can be made across scale and resources. Regardless of where SP members are located and their level of biodiversity expertise, a comprehensive conservation program is best started by completing four easy steps before putting shovel to the ground:

- Define goals and objectives
- Identify target stakeholders
- Assess available resources
- Prioritize suitable projects

## DEFINE GOALS & OBJECTIVES

### *From a business perspective*

In the early stages of their efforts, SP members are encouraged to reflect on their intended goal in engaging in conservation. Primary goals for engagement are not typically conservation-driven; they are more often linked to a business need or challenge unique to the company. To best identify the goal, take a few minutes to ask yourself:

- What does future success look like for the team?
- What can conservation efforts help my team and my business achieve?
- What may change if my business is considered a conservation champion?
- What's in it for me, as a conservation champion or team member?

For some SP members, the goal may be to contribute to the positive reputation of the automotive industry. For others, support of community engagement and government relations could be influencing how a conservation program is designed. Some may also seek to use conservation to meet STEM targets or generate content for sustainability reporting.

There are no right or wrong answers: the goal you define serves to build a business case for conservation, guide the path to successful corporate programs, and help identify compatible biodiversity approaches from the very beginning.

### *From a conservation perspective*

The choice of conservation objective – the ecological or community priorities you are looking to further or outcomes you are trying to achieve – also guides the path to successful corporate conservation programs. Unlike the goals associated with the business engagement, the conservation objectives are driven by the environment surrounding you. What is the project or program trying to accomplish through conservation? With the specific interest in pollinator projects, SP members may consider conservation objectives such as:

- Creating locally appropriate pollinator gardens supporting the needs of species native to your region, including their migration
- Restoring native grassland habitat to support pollinator life-cycle needs
- Utilizing pollinator habitat to provide a hands-on educational experience and STEM education to local school groups
- Managing a native grassland that is self-perpetuating and minimizes long-term maintenance costs
- Raising awareness about pollinator-friendly gardening techniques
- Contributing to citizen science
- Improving watershed health



Looking for **goal** inspiration? Download the [C-Suite 16](#) reference sheet, presenting 16 main business drivers supported by conservation activities, as reported by your corporate peers.

Looking for conservation **objective** inspiration? Consult the [Project Guidance Documents](#) available for various habitat, species, and education categories.

## Identify target stakeholders

When it comes to conservation, the two broad types of stakeholders - internal and external - can play significant roles across a program's lifecycle. The four main stages of a conservation program typically are (see figure 1).

1. Design and planning
2. Program initiation and management
3. Long-term use
4. Communication and storytelling

In the initial phase of program planning, SP members are encouraged to pursue active internal stakeholder engagement. Doing so early helps to build a strong business case, secure permissions and budgets, and form a team of volunteers.

Example internal stakeholders include:

- Operations and facilities management
- Manufacturing or production facility employees
- Sustainability, land, procurement, or environment departments
- Public affairs or community relations teams
- Executive company leadership

Externally, active stakeholder engagement may include involving trusted community or conservation partners in the planning process, gauging of interest in collaboration with the school and youth groups, or consulting with local pollinator experts.

While perhaps seeming premature, the planning phase is also the perfect time to identify primary audiences. The target audiences for the future success stories the SP members are crafting are typically passive stakeholders who may be the recipient of communication related to conservation efforts and outcomes. The earlier you know who you will be telling your story to, the better; the audience has a direct impact on project prioritization and metrics selection. The three most common primary audiences are:

- Regulatory agencies at the local, regional, and state levels
- Internal leadership of the SP member company
- Communities in which the SP member operates

Active stakeholder engagement during implementation and long-term use will be explored in Part Four: Leveraging | Engaging Stakeholders.



Figure 1: Four General Stages in a Conservation Program's Life Cycle

## Assess Available Resources

Proper assessment of available resources allows you to select projects that can realistically be implemented and maintained over time. The establishment of a pollinator garden or larger habitat such as a grassland is associated with implementation costs even when led by volunteers. Once established, pollinator projects require periodic maintenance, much like traditional landscaping. Monitoring is also integral to a strong project, with minimal costs but a need for dedicated employee hours. Finally, communication of efforts and outcomes may also require commitment from cross-departmental teams.

The following questions can be used as planning prompts when assessing resources for each project:

- Financial Resources
  - a. How much funding is available to spend in the implementation year?
  - b. What level of funding is likely to be approved for yearly maintenance?
  - c. What budget category will fund these projects?
  - d. Are there capital expenditure initiatives that can offer planning, support, and funding opportunities?
- Human Resources
  - a. How much time can champions realistically be allowed to spend on projects, for example, on a quarterly basis?
  - b. If needed, can we afford external contractors for any aspect of the projects?
  - c. What “experts” do we have on staff?
  - d. What time commitment can we expect from volunteers?

TABLE 1: BASIC RESOURCE PLANNING

	Year 1   Coordination, implementation, maintenance and monitoring	Year 2+   Coordination, maintenance and monitoring
Budget Available (\$)	\$ ____	\$ ____
Total Hours Available Monthly	____ Hours	____ Hours

## Prioritize Suitable Projects

With design parameters in hand (i.e., goals, objectives, and resources) and knowledge of available space and current land use, refer to the table below to identify whether a garden or grassland for pollinators is the best option. The next section, *Part II: Implementation*, as well as the document's appendices, can be utilized for specific guidance on selecting and designing either of those projects.

TABLE 2: PROJECT DECISION TOOL

Local Context	POLLINATOR GARDEN	POLLINATOR GRASSLAND
Program Goal	- Most, if not all, business goals identified can be equally supported by a smaller pollinator garden or a larger grassland restoration. The goal is not a limiting factor in project prioritization.	
Conservation Objective 1	- Both habitat types can support similar conservation objectives, including but not limited to: supporting part of the life cycle needs of pollinators, raising awareness among employees and the community about the importance of pollinators, and contributing to a regional effort to naturalize private properties.	
Conservation Objective 2	- More easily supports objectives of hands-on engagement with employees, students, or volunteers due to access and location. More relatable scale of project for an objective of influencing individual actions taken outside of the company.	- Opens the door to objectives providing habitat to a wider range of species (pollinators, avian, mammals) and/or more completely meeting all life cycle needs of a specific species (i.e., monarchs). Larger habitat offers more diverse opportunities for education engagement: multiple grades, types of curricula, period of year.
Local Context	POLLINATOR GARDEN	POLLINATOR GRASSLAND
Primary Target Audience	- Localized audiences more likely: facility employees, company leadership, immediate neighbors, local municipality.	- Same as pollinator garden, plus environmental and conservation groups, educational institutions, agencies.
Active Stakeholders	- Employees, facilities contractors (landscaping), community volunteers, including youth groups, elementary school groups.	- Same as garden, plus local and regional conservation groups, high school and college students, contractors (ecological and engineering), local natural resource agencies.

Implementation Resources	<ul style="list-style-type: none"> <li>- For a 225-square-foot garden with container plants: \$380 - \$1,335 in plants, soil materials, and tools;</li> <li>- Plan for 10-15 hours of staff time (includes design and build) during first month; 30 minutes per week until plants established.</li> </ul>	<ul style="list-style-type: none"> <li>- For a 1-acre grassland establishment: \$500 - \$1000 per acre and up (depending on size, plant selection, and condition of land area);</li> <li>- Plan for 40 hours, including design, prep, and initial planting.</li> </ul>
Maintenance Resources	<ul style="list-style-type: none"> <li>- If maintenance performed by team or community volunteers: \$15 annually; 2-4 hours a month to maintain during growing season</li> </ul>	<ul style="list-style-type: none"> <li>- \$150 per acre for annual mowing, invasive species control, etc.; 2-5 hours annually.</li> </ul>
Available Space	<ul style="list-style-type: none"> <li>- While the estimates are based on a 15x15-foot (225 square feet) garden, smaller - even container gardens - can be pursued.</li> </ul>	<ul style="list-style-type: none"> <li>- To support the majority of ecological functions a grassland provides, an area of at least 1 acre is recommended. Demonstration grassland plots can be of any size.</li> </ul>
Compatible Current Land Use	<ul style="list-style-type: none"> <li>- Any</li> </ul>	<ul style="list-style-type: none"> <li>- Fields, unused turf grass areas or open space, property buffer zones</li> </ul>

*Note: Resources presented in this example are for naturalized starting conditions (e.g., turf areas or existing landscaping).*

*For financial and human resource data on enhancement beyond gardens and grasslands for pollinators, [contact WHC](#).*



## Part Two: Implementation | Collaborative Effort for Pollinators

Once you have defined goals and objectives, identified target stakeholders, assessed available resources, and prioritized suitable projects, it is time to think about implementation. SP member companies can establish a pollinator garden or grassland habitat project by following these key steps:

1. Select your project location – Assess the land areas at your facility and select a location that receives sunlight, is not overly exposed to the elements, and is accessible to employees and volunteers.
2. Select native species to plant in your garden or grassland – Plant native species as they have better survivability rates, tolerate local temperature fluctuations, require less watering, and provide food and shelter to native wildlife.
3. Build a project timeline – Schedule activities using nature’s calendar (i.e., diurnal patterns, seasons) and operation availability.
4. Collect baseline data – Take an inventory of the plants and features in the area before you start your project; this will serve as before and after condition which can be used to inform project adjustments over time.
5. Prepare the soil – Soil amendments and preparation like weed or turf removal will depend on site conditions and the type of project you select but is essential to project success.
6. Installation – Plant native plants or seed stock in your project area, and don’t forget to engage your internal and external stakeholders and have them participate in the activity.
7. Maintenance – In the first few weeks after planting or seeding, check your habitat area to verify your installation was successful and mark your calendar for the next cyclical activities.

For detailed implementation and maintenance steps associated with the projects selected, consult the technical information provided in *Appendix B: Implementation and Maintenance Guidance*.



## Part Three: Management | Monitoring for Success

Documentation of project activities, monitoring of progress and outcomes, and evaluation of biodiversity projects is central to a robust and sustainable conservation program.

### *Documentation of Activities*

Documentation of decisions, actions, and collaboration is encouraged during the planning, implementation, and long-term maintenance of any project. In the case of conservation programs targeting pollinators and their habitats, the following list includes recommended documentation SP members should capture for each project:

- Design and planning decisions and reasoning, including reliance on local or regional alignments
- Conservation objective
- Baseline habitat or species data, including scientific names, locations on site or within the existing habitat, and photos
- Species planted or seeded, with scientific names, location within project area, date installed
- Photos of habitat changes over time and of implementation activities and/or events
- Copies of source material used to inform the project, education and awareness activities, or about target species (e.g., receipts, alignment research, recommendations, meeting minutes, etc.)
- Maintenance records with dates, such as watering, weeding, and plant replacement
- Record of hours spent on planning and implementation efforts
- Monitoring protocols and the frequency of use to assess progress towards the conservation objective
- Monitoring data (discussed later in this section)

- Results of the evaluation of projects
- Changes made to the conservation program over time, as a result of evaluations or monitoring data analysis, changes to business or program goals, addition of habitat, etc.

SP members can capture the recommended documentation in any format compatible with the teams' preferred approach. WHC recommends considering the use of multi-tab workbooks to capture information in a single location.

### *Monitoring of Progress Outcomes*

Monitoring consists of regular data collection about habitat features and species occurrence across the life cycle of the project. Each facility should adopt a monitoring strategy to match the conservation objective. While specific in its purpose, the monitoring strategy can be flexible enough to adapt to changing business priorities or available resources. In the appendices, SP members are provided with step by step instructions for recommended monitoring practices.

Provided in *Appendices C-E* are scientifically rigorous, replicable protocols for monitoring habitat (garden or grassland) and pollinators. As you refine your monitoring strategy, keep the following best management practices for corporate implementation in mind:

- The protocol provided suggests an ideal frequency of observation to adopt in the best possible conditions of resources. Teams can reduce the frequency if needed; however, monitoring absolutely needs to be conducted no less than twice per year (at the beginning and end of season)/
- SP members are encouraged to monitor both the plant species (plant survival, bloom time, etc.) and the presence and diversity of pollinators and other species using the habitat.
- Monitoring approaches should be consistent; therefore, training for employees potentially conducting the activities is recommended.
- Consider integrating monitoring activities into operations or other cyclical/repetitive tasks, such as routine facility inspections.
- Don't try to monitor everything, but rather stick to the protocol and record results consistently. If a protocol seems to be challenging to the team, consider requesting a simplified protocol from WHC.
- Follow a seasonal schedule appropriate for your climate and pollinator project type to minimize the resource needs, ensure data collection occurs during likely species distribution and occurrence, and maximize monitoring potential during scheduled facility activities.

### *Evaluation of Biodiversity Projects*

Assess projects annually and use the results to guide improvements, adjust resource allocations, and enable the team to measure progress toward meeting the stated conservation objective. When working with the natural world, it is normal to observe fluctuations in the success of project outcomes, so do not be discouraged.

Some examples of evaluation results and how they can inform your project include:

- Pollinators appear to be visiting only two out of the 16 species planted. Next year, we will increase the number of plants the pollinators visit the most, as part of our spring maintenance activities.
- We didn't document a high number of pollinators until 4 weeks after we began monitoring, so next year we will start monitoring at that time to maximize our employees' time in the field.
- The grassland we seeded seems to be doing well, but we did not document many pollinators. We are going to reach out to a local expert recommended by WHC to get suggestions about why this may be happening.
- We planted a garden to attract monarchs, but we did not see any this year. We will plant some companion plants recommended by the County Extension Office next year, and if we still don't seem to be attracting monarch butterflies, we may review our conservation objective and adjust or change it.



## Part Four: Leveraging | Engaging Stakeholders

Successful programs rely on more than a financial contribution by companies - success is all about people.

Pollinator projects can be utilized to proactively engage stakeholders based on a wide variety of interests across various stages of project development. Active stakeholder engagement, referred to here as partnerships, can be internal or based on external collaboration. Inspiration for partnership opportunities is provided in Table 3.

TABLE 3: PARTNERSHIP OPPORTUNITY SUMMARY

	Internal Stakeholders	External Stakeholders
<b>Design &amp; Planning</b>	<ul style="list-style-type: none"><li>• Provide insight into what resources are available and help identify projects, as well as build implementation and maintenance schedules.</li></ul>	<ul style="list-style-type: none"><li>• Assist in defining conservation and education objectives that are meaningful to your community, region, or state; can help planning activities and support project selection.</li></ul>
<b>Implementation</b>	<ul style="list-style-type: none"><li>• Project-specific activities like planting and outreach events can be supported by internal volunteers.</li></ul>	<ul style="list-style-type: none"><li>• Provide credibility to project-specific activities and can support events, planting days, and education about conservation.</li></ul>

Internal Stakeholders		External Stakeholders
<b>Maintenance &amp; Monitoring</b>	<ul style="list-style-type: none"> <li>Support maintenance of the pollinator habitat and conduct monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Support seasonal maintenance activities or participate in monitoring events.</li> </ul>
<b>Evaluation &amp; Adaptive Management</b>	<ul style="list-style-type: none"> <li>Provide feedback and evaluation of the conservation activities and help prioritize changes over time</li> </ul>	<ul style="list-style-type: none"> <li>Leveraging and publicizing outcomes and messages and can help the site team determine and prioritize activities to improve success.</li> </ul>

### Engagement with Internal Stakeholders

Regardless of the company structure or at which stage internal stakeholder engagement occurs, projects can benefit employee morale, provide education and recognition opportunities. Pollinator projects can encourage employee connection to local sense of place and inspire individual actions within communities. Activities and events like these below can be a vehicle for employee engagement:

- Host employee “lunch and learn” events where employees can learn about biodiversity and conservation programs, pollinators, habitat, etc.;
- Showcase the pollinator project area during site open house, safety events, or other employee recognition days;
- Share responsibility for maintenance and monitoring across facility management, operations, and functional groups.



SP members with operations outside the United States can apply the same approach and rely on WHC or other local partners to help them select the best native plant material.

### Engaging with External Stakeholders

SP members can use their pollinator habitat to collaborate with environmental groups, youth organizations, neighbors, and any other community member interested in conservation. Tactics for successful engagement using your pollinator project include:

- Get outside – use your pollinator habitat to conduct informal and formal events, highlighting the benefits of the plants and features chosen to support pollinator and ecosystem health.
- Invite others – leverage the technical skills of your key partners and invite them to share their knowledge about pollinators with employees and members of the community.
- Share your work – participate in citizen science efforts, such as the North American MonarchWatch program, by reporting monitoring observations.
- Inform others – post informative signage about your biodiversity and conservation program in facility locations or offer formal and informal awareness opportunities for employees and community members.



## Part Five: Implementation | Collaborative Effort for Pollinators

SP members can generate recognition for their conservation program and utilize that visibility to support business objectives. Sharing efforts and outcomes internally and in alignment with regional plans and priorities offers a conduit for impactful storytelling.

### *Internal Recognition*

Internal communication about conservation programs typically uses the same channels as other business updates or pathways for recognizing volunteer initiatives. Provide regular updates about projects, activities, and events connected to achieving your conservation objective. Typical mechanisms for internal awareness and recognition include:

- Company newsletters or facility brochures;
- Internal message boards or social media platforms;
- Operational, regional, or national meetings; and
- Internal reports provided to executive committees (sustainability reports or performance metrics).

Conservation efforts and outcomes can be presented in the context of larger company priorities, such as sustainability targets. Data generated from your pollinator project can be used to report as part of key performance indicators.

## External Communication

Local external communication about efforts and outcomes is most effective if framed in a way that aligns with stakeholders' mission, focus, or priorities. A way to achieve this is to collaborate with local stakeholders on the message, soliciting their input on helpful content, metrics, and timing of communication to target audiences.

Data from multiple projects can be aggregated and used to convey a unified company-wide commitment to conservation into various frameworks. For example, conservation program data can be shared in support of:

- Sustainability reports to shareholders, investors, or banking institutions
- Supply chain recognition, certifications, or reporting structures (i.e. ISO, Sustainable Development Goals)
- Local, regional, national, or even international citizen-science platforms
- Environmental or land-use permit reporting
- Suppliers Partnership for the Environment (e.g. Biodiversity Work Group commitments)



**Helpful tip** - An internal database or clearinghouse of stewardship activities and partners can be developed to facilitate information sharing about successes, lessons learned, and technical resources available to support projects.

## Seeking Recognition: WHC Conservation Certification

WHC's Conservation Certification recognizes meaningful wildlife habitat management and conservation education programs at corporate sites, sets the standard for corporate conservation actions, provides quantitative benefits to corporations, and provides third-party credibility through an objective evaluation. Programs that achieve Conservation Certification demonstrate a long-term commitment to managing quality habitat for wildlife and a commitment to conservation education and community outreach initiatives. Features and benefits of WHC Conservation Certification include:

- Tiers of recognition identify outstanding conservation efforts, continuous improvement, and adaptive management efforts.
- Team members are provided with a variety of different approaches towards certification across a comprehensive menu of conservation and education actions.
- Data and results allow you to evaluate your local effort and impact, but also evaluate the cumulative effort and impacts of SP member programs, or as part of far-reaching citizen science programs.
- Activities and outcomes are independently evaluated and can be leveraged to meet company-specific efforts including land stewardship, commitment to healthy ecosystems and communities, and support social license to operate needs.
- Recognition for education is integrated with conservation, including stand-alone projects that recognize formal conservation and STEM-based learning, informal learning, and training.

SP members considering applying for Conservation Certification should be able to answer the following questions about their biodiversity and conservation program:

- ✓ Does your project go above and beyond a regulatory requirement?
- ✓ Does your project have a stated biodiversity and conservation objective?
- ✓ Is your project locally appropriate; does it target local species and support local habitats?
- ✓ Does your project provide a value or benefit to the natural community, like pollinator habitat, or provide value to your community via education and awareness of habitat?
- ✓ Is your project supported by documentation of project activities, wildlife and habitat observations, meeting notes, photographs, etc.?

Wildlife Habitat Council is here to help. [Contact WHC](#) to support any aspect of your conservation program.

# APPENDIX A

## Pollinator Project Selection Tool

WHC developed an outline for establishment and maintenance practices to assist Suppliers Partnership for the Environment members create or restore native pollinator habitat projects at their offices and facilities. The protocol herein is designed to be compatible with current operations, is scalable across facilities, and supports the SP Biodiversity Work Group pollinator initiatives by recommending pollinator habitat project options, including installation and maintenance practices to ensure success.

Determine the appropriate type of pollinator habitat project based on site conditions and available resources (discussed in Part One of the Toolkit). Then follow the implementation and maintenance table and associated monitoring and evaluation protocol (either A, B, or C), based on your determination.

### Project Selection Guide

A: Pollinator Garden in Landscaping Beds	B: Pollinator Garden in Containers	C: Pollinator Grassland
<ul style="list-style-type: none"><li>• Patches of land &lt;0.25 acres (e.g., open space near office entrance or site entrance sign, roadsides)</li><li>• New garden installation or updates to existing landscaping in high-visibility locations</li><li>• Commitment to at least bi-weekly maintenance in first growing season, and seasonal maintenance after</li><li>• Objective to improve visual aesthetic and demonstrated pollinator habitat through life cycle</li><li>• Plugs, pint/quart/gallon pots, and/or seedlings/saplings with moderate diversity – approximately \$1-20 per plant or \$8-\$50 per 10 sq. feet. Budget for gardening tools and labor costs to prep, install, and maintain</li></ul>	<ul style="list-style-type: none"><li>• Accessible locations cannot be excavated to support plantings or landscape changes are not permitted</li><li>• New container installation or updates to existing planter boxes/pots</li><li>• Commitment to at least bi-weekly maintenance in first growing season, and seasonal maintenance after</li><li>• Objective to improve visual aesthetic and demonstrated pollinator habitat through life cycle</li><li>• Plugs and quart/gallon pots with moderate diversity – approximately \$1-12 per plant or \$1-\$36 per 1-gallon container. Budget for gardening tools (e.g., small spades, gloves) and labor costs to prep, install, and maintain</li></ul>	<ul style="list-style-type: none"><li>• Large uniform lands &gt; 0.5 acres (e.g., ROWs, swaths of mowed lawn surrounding buildings/structure)</li><li>• Maintenance activities not available more than once monthly, even during establishment</li><li>• Goal of integration of conservation site management into operations</li><li>• Objective of broad wildlife value acceptable (vs. specific high pollinator value)</li><li>• Pre-made base seed mixes with minimal diversity – approximately \$120-\$500 per acre</li><li>• Seeding equipment rental (e.g., native seed no-till drill) – from \$10/acre</li><li>• Budget for labor costs to prep, install, and maintain</li></ul>
↓	↓	↓

Target community to consist of grasses, wildflowers, and flowering trees/shrubs, with flowering species comprising a majority of the vegetation, in a traditional garden/landscaping setting (i.e., in the ground).

*Follow relevant appendices for project A*

Target community to consist of grasses and wildflowers, with shallow root systems and flowering species comprising a majority of the vegetation, planted in containers such as pots, hanging baskets, and planter boxes.

*Follow relevant appendices for project B*

Target community to be dominated by grasses and wild flowers, with grasses comprising at least 60% of the vegetation.

*Follow relevant appendices for project C*

# APPENDIX B

## Implementation and Maintenance Guidance

WHC developed an outline for establishment and maintenance practices to assist Suppliers Partnership for the Environment members create or restore native pollinator habitat at their offices and facilities. The protocol herein is designed to be compatible with current operations, is scalable across facilities, and supports the SP Biodiversity Working Group pollinator initiatives.

The table below will guide you through the steps needed for six scenarios, depending on which of the three pollinator project types is selected and what the site conditions are for each of those project types.

## Implementation and Maintenance Guidance

Project Type	A: Pollinator Garden in Landscaping Beds		B: Pollinator Garden in Containers		C: Pollinator Grasslands	
Project Area Condition	Enhancing existing landscape bed	New installation - covered in turf	Enhancing existing containers	New installation	Converting existing vegetation/turf	New/bare-ground Installation
<b>Preparation</b>	<ul style="list-style-type: none"> <li>Remove any weeds, dead plants, etc. from the planting areas.</li> <li>Turn/till any areas of the garden where needed and remove large rocks.</li> <li>Consider a soil test to identify whether amendments are needed prior to planting. A target pH level is 6.5-7.5.</li> </ul>	<ul style="list-style-type: none"> <li>In winter or early spring, mow the turf as low to the ground as possible.</li> <li>Broadcast spray a non-selective herbicide, then allow the soil to stand for at least 2 weeks.</li> <li>Repeat herbicide application if weeds return and reach 4-6 inches.</li> <li>Repeat process until no weeds persist.</li> <li>Wait 2 weeks after the last herbicide application, then proceed with the directions for existing gardens.</li> </ul>	<ul style="list-style-type: none"> <li>Remove any weeds, dead plants, etc. from the containers.</li> <li>Loosen existing soil as needed.</li> <li>Amend with perlite or compost, where applicable.</li> </ul>	<ul style="list-style-type: none"> <li>Purchase or build containers. Any kind of container can be used, but should have drainage holes and ideally consist of plastic, glazed pottery, or other material that can hold moisture in.</li> <li>Purchase potting soil and fill containers.</li> <li>Amend potting soil with compost or perlite if needed.</li> </ul>	<ul style="list-style-type: none"> <li>In winter or early spring, mow existing vegetation as low to the ground as possible.</li> <li>Broadcast spray a non-selective herbicide, then allow the soil to stand for at least 2 weeks.</li> <li>Repeat herbicide application if weeds return and reach 4-6 inches.</li> <li>Repeat process until no weeds persist.</li> <li>Wait 2 weeks after the last herbicide application, then proceed bare ground directions.</li> </ul>	<ul style="list-style-type: none"> <li>Consider a soil test to identify whether amendments are needed prior to planting. A target pH level is 6.5-7.5 but may vary depending on the species selected for the seed mix and native soil conditions.</li> <li>Lightly till or disk if soils are compacted.</li> <li>Use a harrow or drag to smooth out the seed bed if clumps are visible.</li> </ul>

Project Type	A: Pollinator Garden in Landscaping Beds	B: Pollinator Garden in Containers	C: Pollinator Grasslands
<b>Planning – Plant Selection</b>	<ul style="list-style-type: none"> <li>Species adapted to site's sun exposure, soil properties, and climate</li> <li>Species native to the region and regionally appropriate for pollinators</li> <li>Purchased from reputable suppliers (refer to <a href="http://www.wildflower.org/suppliers">www.wildflower.org/suppliers</a> to find reputable native plant nurseries).</li> </ul> <p><i>NOTE: There may be individual considerations by condition or project type</i></p>		
	<ul style="list-style-type: none"> <li>Water purchased plants and keep in semi-shaded or cool area prior to planting.</li> <li>Include flowering species with a variety of different heights and bloom colors, of which at least 3 species are blooming at any given time between March-October to provide continuous floral resources through the growing season.</li> <li>Refer to root depth requirements prior to planting any container or raised bed gardens.</li> </ul>		<ul style="list-style-type: none"> <li>Can use custom seed mix or purchase a native seed blend. Seeds can be viable up to 4 years if stored in cool, dry location.</li> <li>Purchase from supplier guaranteeing clean seed.</li> <li>Total seed mix with minimum of 60% grasses, containing at least 3-4 native grasses and 3 forbs, of which a minimum of 1 forb is blooming at any given time between March-October.</li> <li>Include a native cover crop in the seed mix.</li> </ul>
<b>Implementation – Planting Timing</b>	<ul style="list-style-type: none"> <li>Fall – generally September to November, but may vary with <a href="#">USDA hardiness zone</a></li> <li>Spring – generally from March to April, but may vary with <a href="#">USDA hardiness zone</a></li> <li>Proceed with planting during optimal<sup>1</sup> weather conditions to increase chances of success.</li> </ul>		
<b>Implementation - Planting</b>	<ul style="list-style-type: none"> <li>Carefully remove plugs and potted plants from their trays/pots and avoid damaging delicate leaves or stems.</li> <li>Dig a small hole the width and depth of each plant's root ball and carefully place the plant inside, with the base of the plant about 1 inch below the container's rim.</li> <li>Lightly cover the roots with soil and gently pat down the soil.</li> <li>Repeat for each plant, spacing plants in the same container 3-6 inches apart (or as directed by the nursery), with each species grouped together.</li> <li>Give the plants a deep watering immediately after planting.</li> <li>After planting and watering, place up to 1 inch of compost or wood mulch around the plantings.</li> </ul>		<p><i>Select seeding method:</i></p> <ul style="list-style-type: none"> <li>Broadcast seeding <ul style="list-style-type: none"> <li>Advantages: Inexpensive, equipment easy to use and readily available.</li> <li>Disadvantages: Lower germination rate, seed should be pressed into soil.</li> </ul> </li> <li>Drill seeding <ul style="list-style-type: none"> <li>Advantages: Convenient for planting large areas, seed does not need to be pressed into soil, high germination rates.</li> <li>Disadvantages: Can be expensive, equipment must be rented and availability is location-specific, requires experienced operator.</li> </ul> </li> </ul>

<sup>1</sup> To select the best time for planting, avoid prolonged periods of hot, dry, or windy weather.

Project Type	A: Pollinator Garden in Landscaping Beds	B: Pollinator Garden in Containers	C: Pollinator Grasslands
<b>Maintenance – Short Term</b>	<ul style="list-style-type: none"> <li>• Monitor bi-weekly during the first 3 months and then at least every 2 weeks thereafter to identify any weed growth or watering needs.</li> <li>• Control weeds by one of two methods: <ul style="list-style-type: none"> <li>○ Hand pull any weeds as soon as they are observed.</li> <li>○ If weed growth is heavy or plants are too large or established to hand pull, spot-spray scattered weeds with an appropriate herbicide.</li> </ul> </li> <li>• Water plants on a regular basis (1-2 inches per week, depending on rainfall; containers may need to occur daily if the weather is hot and dry), ideally in the early morning, until plants have become established.</li> <li>• For woody species: to remove unhealthy branches or achieve a desired shape, prune when plants are dormant (late winter, after the coldest part of the season); in spring after flowers fade; or in early summer after seasonal growth has completed. Avoid pruning in the fall, and remove no more than one-third of the vegetation at a time.</li> </ul>		<ul style="list-style-type: none"> <li>• Monitor every 2 weeks during the first 3 months and then monthly thereafter to identify any weed growth.</li> <li>• Control weeds by one of two methods: <ul style="list-style-type: none"> <li>○ Mow area down to a high of 6-8 inches once weeds are taller than 8 inches.</li> <li>○ Target scattered weeds by spot-spraying with an appropriate herbicide.</li> </ul> </li> <li>• Move from a short-term to long-term maintenance strategy once: <ul style="list-style-type: none"> <li>○ Desired vegetation has successfully attained full ground coverage; and/or,</li> <li>○ A majority of the species planted in the seed mix have been observed growing successfully in the grassland.</li> </ul> </li> </ul>
<b>Maintenance – Long Term</b>	<ul style="list-style-type: none"> <li>• Water plants as needed during the growing season, especially during dry periods. Trees and shrubs will likely require supplemental watering during hot and dry periods for the first 3 years. Consult the moisture requirements of each planted species to determine the amount of watering needed.</li> <li>• Check monthly checks for weeds, and control using hand-pulling or spot-spraying with herbicide, as described in above.</li> </ul>		<ul style="list-style-type: none"> <li>• Mow annually in early spring or fall on a rotational cycle by dividing the grassland into strips 50-100 feet wide, and mowing 1/3 of the strips each year.</li> <li>• To prevent harm to wildlife, mow either by spiraling outward from the center or from side to side.</li> <li>• Spot-treat weeds with an appropriate herbicide if mowing or burning does not adequately control weed regrowth.</li> </ul>

# APPENDIX C

## Monitoring Protocol for Pollinator Project Types A & B (Gardens)

### Monitoring Garden Vegetation Timeline

During Establishment (Year 1):

1. Monitor presence/absence of planted species every 2 weeks during the first 3 months of establishment.
2. Identify any weed growth, watering needs, or other problems that need to be addressed.
3. After the first 3 months, monitoring frequency can be reduced to once per month for the remainder of the growing season.

After Establishment (Year 2 and Beyond):

1. Conduct annual to seasonal assessment of plant survival rates, absence/presence, and bloom times to document the project's success and value to pollinators, and to flag any issues requiring attention such as additional watering or weeding needs.
2. Document which plant species have successfully established, as well as which pollinator species are using the plantings.

### Evaluate Results and Determine Next Steps

Information on the presence/absence of species in the garden, survival of each species, and bloom times can be used to evaluate how successful the project was (e.g., were native plant species successfully established?) and determine next steps for the project.

1. At the end of each year, compile the monitoring data to determine the total number of plant species in the garden and the survival rate for each species.
2. If multiple sites are surveyed, compare the presence/absence and survival rates between sites, which will likely reflect any differences in habitat quality among sites. If desired, use this information to rank the quality of sites as habitat or the quality of the seed mix/planting list used.
3. Compare the current year's data with that of previous years to evaluate changes in the garden over time. Did any species disappear from the garden? Did any species have consistently low or high survival rates? Was at least one species blooming during visits?
4. Use the data to determine if changes or additional actions are needed to improve the value of the habitat to pollinators, such as replanting bare spots or replacing low-survival species with another species more suited to the conditions.

# Example Garden Vegetation Monitoring Log

Site Name: \_\_\_\_\_

Date: \_\_\_\_\_

Observer: \_\_\_\_\_

Type of planting (circle): Container Garden / Garden in Landscaping Beds / Other (describe): \_\_\_\_\_

Scientific Name	Common Name	Date Planted	# Planted	# Surviving	Blooming?	Height	Notes
EXAMPLE	EXAMPLE	04/13/19	10	8	Yes	12 in.	Signs of herbivory

# APPENDIX D

## Monitoring Protocol for Pollinator Project Type C (Pollinator Grassland)

### Monitoring Grassland Vegetation Timeline

During Establishment (Year 1):

1. Monitor presence/absence of seeded species every 2 weeks during the first 3 months of establishment.
2. Identify any weed growth, watering needs, or other problems that need to be addressed.
3. After this 3-month period, monitoring frequency can be reduced to once per month for the remainder of the growing season.
4. Cover crops should be mowed before they become mature and set seed.

After Establishment (Year 2 and Beyond):

5. Conduct annual to seasonal assessment of percent cover for each species and bloom times to document the project's success and value to pollinators, and to flag any issues requiring attention.
6. Document which plant species have successfully established.

### Evaluate Results and Next Steps

Information on the percent cover of each species in the grassland and bloom times can be used to evaluate how successful the project was (e.g., did the seeded native plant species successfully establish?) and determine next steps for the project.

1. At the end of each year, compile the monitoring data to determine the average percent cover for each species and when it was blooming.
2. If multiple sites are surveyed, compare the percent cover between sites, which will likely reflect any differences in habitat quality among sites. If desired, use this information to rank the quality of sites as habitat or the quality of the seed mix/planting list used.
3. Compare the current year's data with that of previous years to evaluate changes in the grassland over time. Did any species disappear from the grassland? Did any species become dominant? Did any species show consistent increases or decreases in cover over time? Is there at least one species in bloom throughout the growing season?
4. Use the data to determine if changes or additional actions are needed to improve the value of the habitat to pollinators, such as reseeding to increase diversity of grassland vegetation.

# Grassland Vegetation Monitoring Log

Site Name: \_\_\_\_\_

Date: \_\_\_\_\_

Observer: \_\_\_\_\_

Type of planting (circle): Existing Grassland / Newly Planted Grassland / Other (describe): \_\_\_\_\_

Scientific Name	Common Name	Date Seeded	% of Seed Mix	Current % Cover	Blooming?	Height	Notes

# APPENDIX E

## Monitoring Protocol for Pollinators

It is suggested that participants read through the protocol before going into the field in order to have a good understanding of what is expected of them during the monitoring session.

**Step 1:** Collect supplies needed for monitoring:

- Field guide for pollinator identification (e.g., Kaufman or Peterson field guides)
- Plant list
- Clipboard with printed monitoring log sheet or tablet for recording data
- A stopwatch, wristwatch, or timer on your phone
- Monitoring protocol
- Thermometer
- Pencils/Pens
- Long measuring tape (e.g. 100-150 ft.)
- Flags or stakes to mark transect start and end
- Optional: camera or phone with high quality camera
- Suggested: sunscreen, hat, water, first aid kit, other relevant safety gear

**Step 2:** Familiarize yourself with key identifiers for native bees, butterflies, moths, and flies on the [Xerces Society website](#) before going into the field.

**Step 3:** Review monitoring protocol instructions and data sheet (see next page).

**Step 4:** Monitor your pollinator garden or grassland for the presence of pollinator species (refer to next page and data sheet for instructions).

## Tips for Successful Monitoring

- Pace yourself while making observations, so that your 15 minutes of observations can be conducted along your entire area (for example, your 100-foot transect).
- If your timer expires too soon, do a quick count of the number of species observed and record those results.
- Don't count the same pollinator twice, even if it visits several flowers—*the goal is to count the number of pollinators using the habitat* (not the rate of flower visitation).
- Take photos of the pollinators observed, especially if identification cannot be made in the field.

## Monitoring Pollinators

1. When to monitor:
  - i. Monitor at least once per month, or more frequently if desired. Maintain the same monitoring frequency throughout the year.
  - ii. Start monitoring in the early spring and end after the first frost.
  - iii. Monitor only on sunny days with little to no wind, ideally in the afternoon (12-4 pm). Partly cloudy or overcast is acceptable if you can still see a shadow.
2. For the first visit, set a monitoring transect 100 feet long. A transect is a line or path along which one counts and records occurrences of pollinators. A series of shorter transects that add up to 100 feet total (e.g., four 25-foot transects) can be used for smaller habitats. If the habitat is larger than 1 acre, use two 100-foot transects.
3. Transects should be measured out and marked (use flags or stakes), and should be the same for all monitoring sessions.
4. Record the time of day you start, then start the timer (15 minutes) and begin slowly walking the transect. Plan your walk so that your shadow does not move in front of you or across where you are counting pollinators.
5. As you walk, record observations of pollinators seen within 3 feet of each side (total 6 feet) and visiting a flower (visiting = landing on the reproductive structures of a flower for more than 0.5 seconds).
6. Write down the count of each type of pollinator seen (bee, honeybee, butterfly, moth).
7. Pause the timer if you need to look something up, take photos, or write more extensive notes, then start the timer again when you are ready to resume observations.

## Evaluate Results and Determine Next Steps

The number of native pollinators counted by this protocol may have a positive correlation with the diversity of pollinators visiting the habitat. This information can be used to evaluate the success of the project in benefitting pollinators and determine next steps for the project. Note: European honeybees should not be considered in the evaluation because they can be an unreliable indicator of the habitat's value to native pollinators and their numbers are dependent on the location of hives/apiaries nearby.

1. At the end of each year, compile the monitoring data to determine the total number of pollinators and the number of each type of pollinator observed that year.
2. If multiple sites are surveyed, compare the diversity of the pollinator community between the sites, which will likely reflect any differences in habitat quality among sites. If desired, use this information to rank the quality of sites as pollinator habitat or the quality of the seed mix/planting list used.
3. Compare the current year's data with that of previous years to evaluate changes in the on-site pollinator community over time. Did counts go up, go down, or stay the same?
4. Use the data to determine if changes or additional actions are needed to improve the value of the habitat to pollinators, such as adding additional plant species.

# Example Pollinator Monitoring Log

Site Name: \_\_\_\_\_

Date: \_\_\_\_\_

Observer: \_\_\_\_\_

Type of planting (circle): Existing Grassland / Newly Planted Grassland / Other (describe): \_\_\_\_\_

Conduct observation in the afternoon (noon-4 pm), when temperatures are above 60°F, skies are clear (partly cloudy or bright, overcast is acceptable if you can see your shadow), and wind speed is low (a gentle breeze or less). Conduct observations on the set transect(s). For each transect, record the number of native bees, honeybees, butterflies, and moths visit flowers (touching reproductive structures of flowers) within 3 ft of the transect line. You can note flies, wasps, larvae, or other floral visitors in the notes.

Transect	Start Time	End Time	# Bees	# Honeybees	# Butterflies	# Moths	Notes
Transect 1							
Transect 2							

# APPENDIX F

## Conservation Resources for Suppliers Partnership Members

### WHC Resources

- SP Toolkit webinar - view the webinar recording with presentation visuals: <https://attendee.gotowebinar.com/register/3253867620158798339>
- WHC Conservation Certification Website: <https://whc.smartsimple.com>
- Program Initiation Checklists: <http://www.wildlifehc.org/whc-conservation-program-checklist>
- Conservation Certification Support Center: <https://certsupport.wildlifehc.org>
- Additional Conservation Strategy and Planning Services Available: <https://www.wildlifehc.org/services>

### Pollinator Resources

#### WHC Website Resources

Find a variety of resources for strengthening your pollinator project management in a corporate setting. Discover pollinator conservation tactics and success stories in our white paper, [Prioritizing Pollinators in Corporate America](#), get a step-by-step guide for developing, managing, and maintaining your pollinator project with our [Pollinator Project Guidance Document](#), and listen in to our on-demand webinars such as [Monarchs in Peril – How Can You Help?, You Too Can Create Positive Pollinator Projects](#), or [Plants and Pollinators with Dr. Stephen Buchmann](#).

#### Monarch Joint Venture

[Monarch Joint Venture](#) is a multi-stakeholder partnership aimed to conserve and protect monarch populations and their migratory phenomena. They offer many resources based on providing tools for conservation and monitoring, as well as collecting scientific data through [citizen science efforts](#). Their [Integrated Monarch Monitoring Program](#) (IMMP) is a national initiative that provides templates to use on your phone or laptop for specific monitoring protocols (e.g., milkweed and blooming plant surveys, egg and larva surveys, and adult monarch surveys).

#### Native Plant Resource

[Ladybird Johnson Wildflower Center](#) provides a plethora of information for native plants by state and ecoregion. Plant lists such as '[Special Value to Native Bees](#)' can be filtered to find native species by bloom time, growing conditions, location, or even plant habit.

#### Xerces Society

[Xerces Society](#) specializes in providing information for the conservation of invertebrates. Plant lists by state and region can help you determine which native plants to grow and for what target species. Their citizen science platforms include a [Western Monarch Count](#) program, as well as a [Western Monarch Milkweed Mapper](#).

#### Monarch Watch

[Monarch Watch](#) is a dynamic community of educators, citizens, and scientists coming together to provide monarch conservation materials, plant lists, and a platform for tracking monarch habitat connectivity, called the [Monarch Waystation Program](#). Any individual who has installed a habitat that fulfills monarch life cycle needs can register to become part of this effort, which aims to increase connectivity along the migration routes from Mexico.

## Monarch Conservation Database

The [Monarch Conservation Database](#) is a U.S. Fish and Wildlife Service effort to create the most comprehensive monarch database, compatible with other databases and data collection efforts. Anyone can perform data queries, and those conducting conservation on the ground may request access to enter collected data into the system.

## WHC Information

### For questions regarding website or application support:

Mary Collins  
Conservation Coordinator  
[mcollins@wildlifehc.org](mailto:mcollins@wildlifehc.org)  
240.247.0908

### For program or application support:

Doreen Davis  
Conservation Specialist  
[ddavis@wildlifehc.org](mailto:ddavis@wildlifehc.org)  
240.247.0932

### For SP related support and company level support:

Sara Cook  
Manager, Conservation Planning  
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240.247.0910