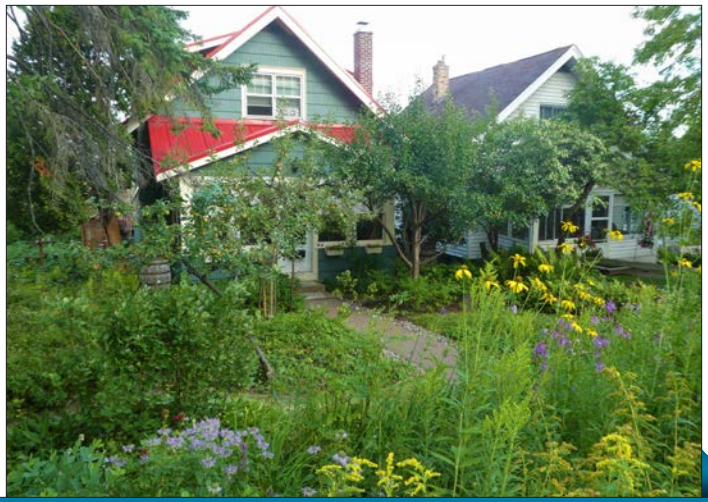
Habitat Assessment Guide for Pollinators in *Yards, Gardens, and Parks*

Above: a diversity of native wildflowers make it possible for this small urban pollinator garden to support a variety of bees, butterflies, and other insects all season long. Below: native wildflowers and fruit trees provide high quality resources for pollinators, wildlife, and people in a small space.

Purpose

Landscaping for pollinators is one of the easiest ways for urban, suburban, and rural residents to directly benefit local wildlife. Schoolyards, community gardens, back yards, corporate campuses, rain gardens, and neighborhood parks all have the potential to meet the most basic needs of pollinators, including protection from pesticides, and resources for foraging, nesting, and overwintering.

The goal of this tool is to evaluate pollinator habitat at a given site, and identify areas for improvement. This process will also help you prioritize the most essential next steps to take for pollinators at the site.



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The Xerces Society for Invertebrate Conservation

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XERCES SOCIETY for Invertebrate Conservation

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Acknowledgments

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Photographs

We are grateful to the photographers for allowing us to use their wonderful photographs.

- **Ali Boese:** Figure 2 (<10% flowering vegetation, *p. 5*).
- **Dustin Demmer / Blazing Star Gardens, LLC:** Figure 1 (6. flowering median, *p. 3*).
- **Kiley Friedrich:** Figure 6 (cellophane bee nests on campus, *p. 8*).
- **Pascal Gaudette** [flickr.com/doundounba]: Figure 7 (green sweat bee nesting in log, *p. 9*).
- **John Kehoe** [flickr.com/johnjkehoe_photography]: Figure 7 (leafcutter bee nesting in wall, *p. 9*).
- **Kent McFarland** [flickr.com/vtebird]: Figure 7 (bumble bee queen nesting in bunchgrasses, *p. 9*).
- **Stephen Thomforde:** Figure 1 (7. flowering native bee lawn, *p. 3*).
- **The Xerces Society / Nancy Lee Adamson:** Figures 1 (3. vegetable gardens, *p. 3*), 9 (numerous pollinators on wingstem, *p. 10*).
- **The Xerces Society / Jessa Kay Cruz:** Figure 5 (before and after, *p. 7*).
- **The Xerces Society / Candace Fallon:** Figure 6 (mining bee nest, *p. 8*).
- **The Xerces Society / Sarah Foltz Jordan:** Cover (small garden); Figures 1 (1. fruit trees, 3. flowering shrubs, 4. shade flowers, 5. prairie pocket, 9. flowering curb, *p. 3*); 4 (native prairie, *p. 6*); 7 (nests in dead tree, *p. 9*).
- **The Xerces Society / Kelly Gill:** Figure 4 (wooded area, *p. 6*).
- **The Xerces Society / Jennifer Hopwood:** Figures 2 (~40% flowering vegetation, *p. 5*); 6 (small sweat bee nest, *p. 8*); 8 (community science project, *p. 10*).
- **The Xerces Society / Emily May:** Figure 3 (~80% native flowers, *p. 6*).
- **The Xerces Society / Sara Morris:** Figures 1 (cavity-nesting bee, *p. 3*); 3 (<10% native flowers, *p. 6*); 4 (edible landscaping, *p. 6*); 6 (green sweat bee nest, *p. 8*); 7 (small carpenter bee nest in raspberry & resin bee nest in fence post, *p. 9*).
- **The Xerces Society / Matthew Shepherd:** Cover (urban pollinator garden); Figures 1 (ground-nesting bee, 8. rain garden, *p. 3*); 3 (~50% native flowers, *p. 6*); 4 (flowering bee lawn, *p. 6*); 7 (bee nests in prairie plant, *p. 9*); 8 (pollinator habitat sign & yard/garden tour, *p. 10*).
- **The Xerces Society / Mace Vaughan:** Figure 8 (community garden, *p. 10*).
- **The Xerces Society / Justin Wheeler:** Figure 2 (~80% flowering vegetation, *p. 5*).

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The Xerces Society for Invertebrate Conservation is a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat. Established in 1971, the Society is at the forefront of invertebrate protection, harnessing the knowledge of scientists and enthusiasm of citizens to implement conservation programs worldwide. The Society uses advocacy, education, and applied research to promote invertebrate conservation.

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Assess How Your Landscape Is Supporting Pollinators

Instructions

- This habitat assessment guide is designed for urban, suburban, and rural developed landscapes. If you are working on a farm, natural area, or rangeland, please see xerces.org/habitat-assessment-guides for a more appropriate guide.
- Prior to conducting an assessment, you may wish to print aerial photos to help with site and landscape questions.
- The assessment should ideally be done twice, once during the habitat evaluation process (before taking recommended actions) and once after any changes have been implemented.
- Use the **Checklist of Actions to Promote Pollinators (page 4)** to help you select next steps for your site.

Total Score for Habitat Assessment

1. Each item in the assessment should be given the appropriate value from the "Score" column, or a score of 0 if not present.
2. Add up the scores to calculate a subtotal for each subsection (e.g., 1c. Foraging features present on site.).
3. Next, add up subsection subtotals to get a total for each section. Transfer these figures into the summary table on page 5 to generate the overall score for each assessment.
4. The scores in each section should be used to identify resource concerns and prioritize next steps. For example, if the nesting resource score is low, actions that boost that score should be prioritized. Ideally, managers at each site should strive to achieve an overall score of at least 180 points, with ongoing improvements to the site (and score) each year.

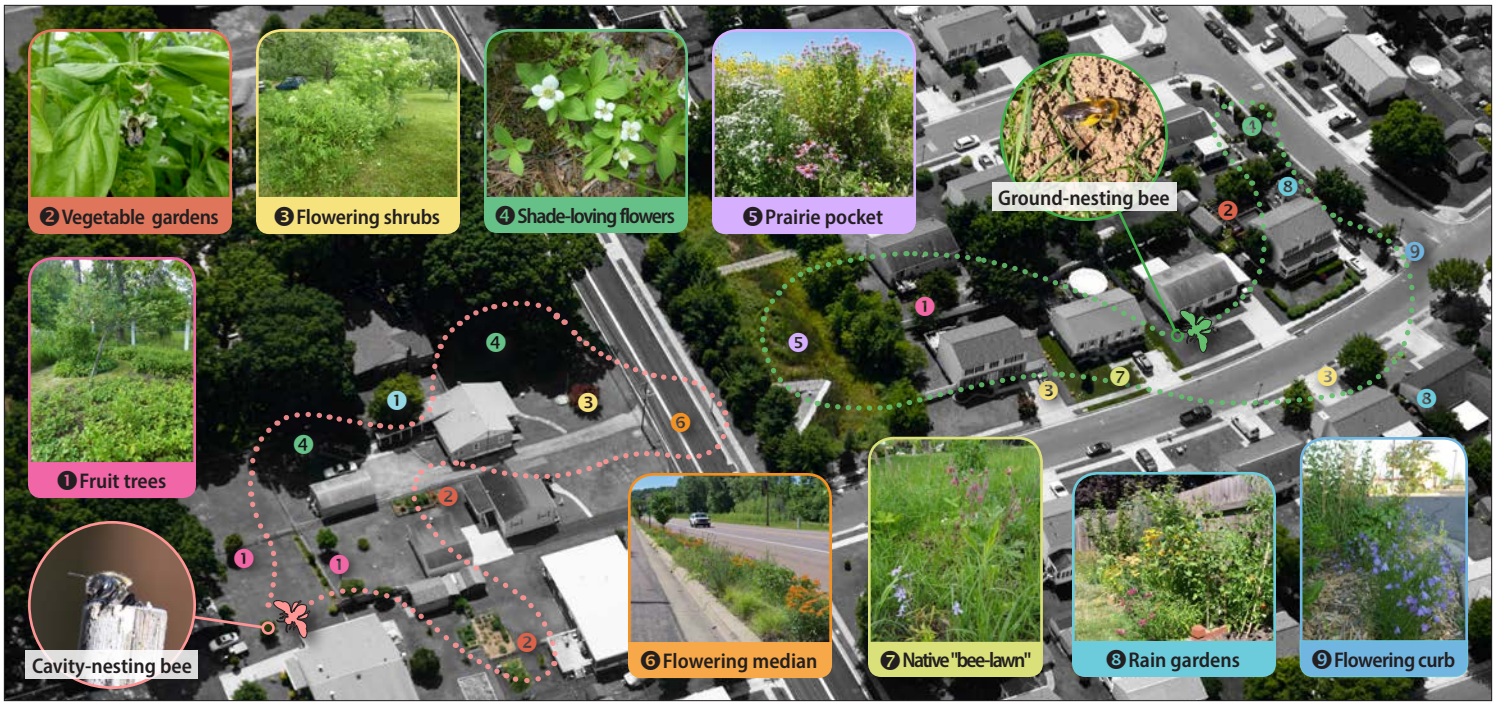
Quick Guides for Improving Habitat

If you are not interested in scoring your site, but still want to improve your habitat for pollinators, use the **Checklist of Actions to Promote Pollinators** (page 4) along with the **Xerces Society Recommended High Value Plants for Pollinators** (page 12) for priority steps you can take to improve habitat for pollinators. These two resources can also be downloaded as a single sheet at xerces.org/habitat-assessment-guides, making it easy to share or bring on trips to your local garden center!

Why Plant Native?

Native plants have a very long history of naturally occurring in the wild ecosystems of a given area (pre-European settlement of the Americas). **Non-native plants** naturally occur in other parts of the world or the country, but may grow well in your area as ornamental or garden plants. Some non-native plants have the tendency to escape into the wild and become **invasive**, replacing natives plants and causing serious ecological and economic problems. Although pollinators may find some nutritional value from non-native plants, **native plants do the best job of supporting the widest array of native pollinators**, given their long co-evolutionary history. In fact, roughly ⅓ of bee species will only collect pollen from particular native plants, and most butterfly and moth caterpillars can only feed on particular native plant leaves. See **Reference Materials & Resources** on page 11 for further information.

Figure 1: Abundant natural areas and wildflower landscaping in your neighborhood can help facilitate the movement of pollinators from one patch of habitat to another, and increase the likelihood that they will have enough food and nesting sites to build healthy populations.



CHECKLIST OF ACTIONS
To Promote Pollinators In Yards, Gardens & Parks

XERCES SOCIETY for Invertebrate Conservation

KEY:

- Promotes foraging resources
- Helps protect pollinators from pesticide exposure
- Promotes nesting and overwintering habitat
- Contributes to pollinator conservation in your community

LANDSCAPING

- ☐ Plant a **native** wildflower garden that includes species that bloom in succession all season long and are high-value to pollinators (species with ★ on **Table 1**, page 12).
- ☐ Plant **native** bunchgrasses; these plants are food for rare butterflies and also help provide nesting sites for bees.
- ☐ Reduce lawn footprint by converting as much as possible to *flowering* habitat.
- ☐ Plant ***spring***-blooming **native** wildflowers, such as woodland ephemerals in shady areas.
- ☐ Plant ***spring***-blooming **native** shrubs and trees, such as willows (*Salix*), maples (*Acer*), and native fruit trees and shrubs.
- ☐ Plant ***summer***-blooming **native** wildflowers, such as blazing star (*Liatris*), bee balm (*Monarda*), and numerous others.
- ☐ Plant ***summer***- *or* ***fall***-blooming **native** shrubs, such as wild roses (*Rosa*) or meadowsweet (*Spirea*).
- ☐ Plant ***fall***-blooming **native** wildflowers, such as asters (*Symphyotrichum*), native sunflowers (*Helianthus*), and goldenrods (*Solidago*).
- ☐ Plant **native** trees that serve as important host plants for a wide variety of butterflies and moths (species with on **Table 1**, page 12).
- ☐ Plant **native** milkweed (*Asclepias*), violets (*Viola*), pawpaws (*Asimina*), or other regionally appropriate plants that provide critical food for specialist butterflies and moths.
- ☐ Plant species known to provide food for specialist bees in your region (species with on **Table 1**, page 12).
- ☐ Gradually replace perennial and annual landscaping that provides little value to wildlife (e.g., daylilies, hostas, pansies) with more diverse **native** wildflower plantings.
- ☐ If non-native plants are included in landscaping, choose varieties that are known to have value to pollinators (e.g., flowers with ample pollen or nectar) **AND** that are not invasive or aggressive.
- ☐ Remove invasive species from your landscape, as well as any non-native species that appear to be spreading into wild areas (e.g., butterfly-bush).
- ☐ Ensure that new landscaping plants were not treated with neonicotinoids or other related insecticides.

LAWN & YARD CARE

- ☐ Avoid pesticides (including herbicides, insecticides, and fungicides) on lawns and other landscaping; choose less harmful alternatives such as non-chemical controls.
- ☐ For mowed areas, reduce mowing frequency and increase mowing height, allowing flowering weeds to flourish.
- ☐ Leave dead wood on site, including dead logs, snags, and brush; consider planting flowers around these features, to add intention and aesthetic value.
- ☐ Leave leaf litter on-site—keep a thin layer of leaves on lawn; use the rest to mulch trees/ shrubs/ garden and/or rake to woodland edges if available.
- ☐ Leave bare spots or areas with patchy vegetation in lawn; avoid thick turf and sod.
- ☐ Avoid plastic mulch/ weed barrier, heavy wood chips, and treated wood chips.
- ☐ Leave dead wildflower stems standing over the ***winter***; prune them back in ***early spring*** to 8–12" to create nesting sites for stem-nesting bees.
- ☐ Prune shrubs with pithy stems, to create nesting sites for stem-nesting bees.
- ☐ Leave some areas of lawn unmown to create tall grass habitat.
- ☐ Install a water feature (e.g., bird bath with stones to prevent insects from drowning) for pollinators that need water for nest building or other uses.
- ☐ Seed a "bee lawn" (incorporate clovers & other flowers into new or existing lawn).

FRUIT & VEGETABLE GARDENS

- ☐ Plant fruit trees and fruit-bearing shrubs, including **native** species when possible (e.g., blueberries [*Vaccinium*], currants and gooseberries [*Ribes*], elderberries [*Sambucus*], chokeberries [*Aronia*]—species with on **Table 2**, page 12).
- ☐ Plant **native** raspberries/ blackberries (*Rubus*); prune in ***early spring*** to create nest sites for stem-nesting bees.
- ☐ For more continuous fruit and flowers, plant ever-bearing varieties of strawberries (*Fragaria*), raspberries, and other fruits.
- ☐ Plant a tea or herb garden and allow plants like basil (*Ocimum*), mint (*Mentha*), and lavender (*Lavendula*) to flower; most herbs do very well in containers if space is limited (see **Table 2**, page 12).
- ☐ Plant bee-pollinated vegetables like squash (*Cucurbita*) and tomatoes (*Solanum*) **and** allow pollinator-attractive culinary garden plants—such as lettuce (*Lactuca*) and mustard (*Brassica*)—to bolt in order to provide additional floral resources (see **Table 2**, page 12).
- ☐ Avoid pesticide use on fruit and vegetable crops; manage pests by using prevention strategies (e.g., crop rotation or selection of resistant varieties) and non-chemical pest control methods (e.g., hand-picking or insectary plantings to promote beneficial insects for natural pest control).

COMMUNITY ACTION

- ☐ Organize a neighborhood **native** plant or seed exchange (**never** share non-native plants that are aggressive / potentially invasive).
- ☐ Create habitat in community hubs (e.g., libraries, post-offices, schools, or senior centers) or in unused spaces like sidewalk medians.
- ☐ Volunteer with a local park to improve habitat (e.g., removing invasive species or collecting wildflower seeds).
- ☐ Provide signage to explain your pollinator conservation actions to your neighbors.
- ☐ Host a tour of your pollinator friendly yard or garden.
- ☐ Talk about pollinators and their habitat needs to your neighbors, friends, family, local businesses, schools, library, church, etc.
- ☐ Talk to your city officials or local colleges about signing a bee friendly resolution and/or getting certified as a Bee City USA or Bee Campus USA.
- ☐ Participate in a community science project, such as bumble bee or monarch monitoring (see *Resources*, page 11).

Print additional copies of this and other habitat assessment tools at: xerces.org/habitat-assessment-guides.

SCORING YOUR SITE

Site Summary

Site name:	
Owner(s)/manager(s):	
Address:	
Define and describe the project area:	

Attach map or sketch below, if available:

Site Assessment

Assessment Dates		
	BEFORE	
	AFTER	

Optional: Checklist of Actions to Promote Pollinators

Score Your Site ➡	MAX	BEFORE	AFTER
Section 1: Foraging Habitat	100		
Section 2: Nesting Habitat	50		
Section 3: Pesticide Practices	35		
Section 4: Community Action	40		
OVERALL SCORE	225		

Section 1: Foraging Habitat

Pollinators need a diversity of abundant flowers that bloom throughout the growing season. Native plants do the best job supporting a wide diversity of pollinators, and are essential for many species.

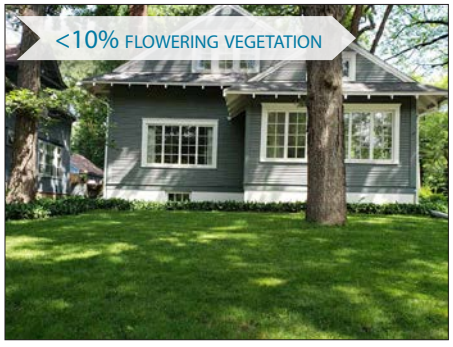
1a. Percent of site (excluding paved areas and buildings) composed of flowering vegetation (Figure 2). This includes native wildflowers, ornamental flowers, flowering shrubs, or decidous trees. *Does not include lawn areas, or invasive or noxious species (See* https://plants.usda.gov/java/noxiousDriver *for additional examples).*

Max score of 10.

SCORE ALL OPTIONS THAT APPLY (points per option)	Score	Before	After	Treatment to increase score (see items with ❁ on page 4)
Percent cover of flowering vegetation: *Score 1 point for every 10% of vegetation that flowers, up to 10 points.*	0–10			
Subtotal (1a)				(1a)

Section 1: Foraging Habitat

Figure 2: Examples of percent cover of flowering vegetation (note: count all plants that provide flowers, whether or not they are currently in bloom):



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1b. Percent of flowering vegetation on site that is native (Figure 3).

Max score of 10.

SCORE ALL OPTIONS THAT APPLY (POINTS PER OPTION)	Score	Before	After	Treatment to increase score (see items with ❀ on page 4)
Percent of flowering cover that is native: *Score 1 point for every 10% of native flowering vegetation, up to 10 points.*	0–10			
Subtotal (1b)				(1b) →

Figure 3: All three of these yards have high percentages of vegetative cover that flowers. However, they differ in how much of that flowering cover is **native**:

1c. Foraging features present on site (Figure 4).

Max score of 37.

SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score (see items with ❀ on page 4)
Diverse native prairie patches, rain gardens, or other native wildflower plantings. *Score 10 if any of these features are present. If these features take up the entire yard/site, score 37 and move on to next section.*	10			
"Bee lawn" with flowers that bloom when mown at standard heights (e.g. clover, creeping thyme, self-heal). Mowing is less frequent than traditional turf.	4			
Wooded or shrubby areas with a variety of native flowering species (e.g., maples, basswood, willows, wild plum, or other fruit-bearing shrubs)	10			
Native plants (e.g., woodland ephemerals in shady areas) are used for ground cover, rather than wood chips, turf, or non-natives like daylilies or hostas.	5			
Edible landscaping/vegetable garden with bee-pollinated plants (e.g., squash, apple) and/or plants that are allowed to bolt (e.g., lettuce, basil).	4			
Ornamental flower gardens with pollinator-friendly annuals or perennials, such as lavender, cosmos, hollyhocks or zinnias.	4			
Subtotal (1c)				(1c) →

(1a + 1b) ↓

Figure 4: Examples of foraging features include:

Diverse native prairie patch *or* rain garden

Flowering "bee lawn" (shown: white clover)

Native flowering wooded area with shrubs, trees, *and* ground plants

Edible landscaping (foot path bordered by berries and herbs)

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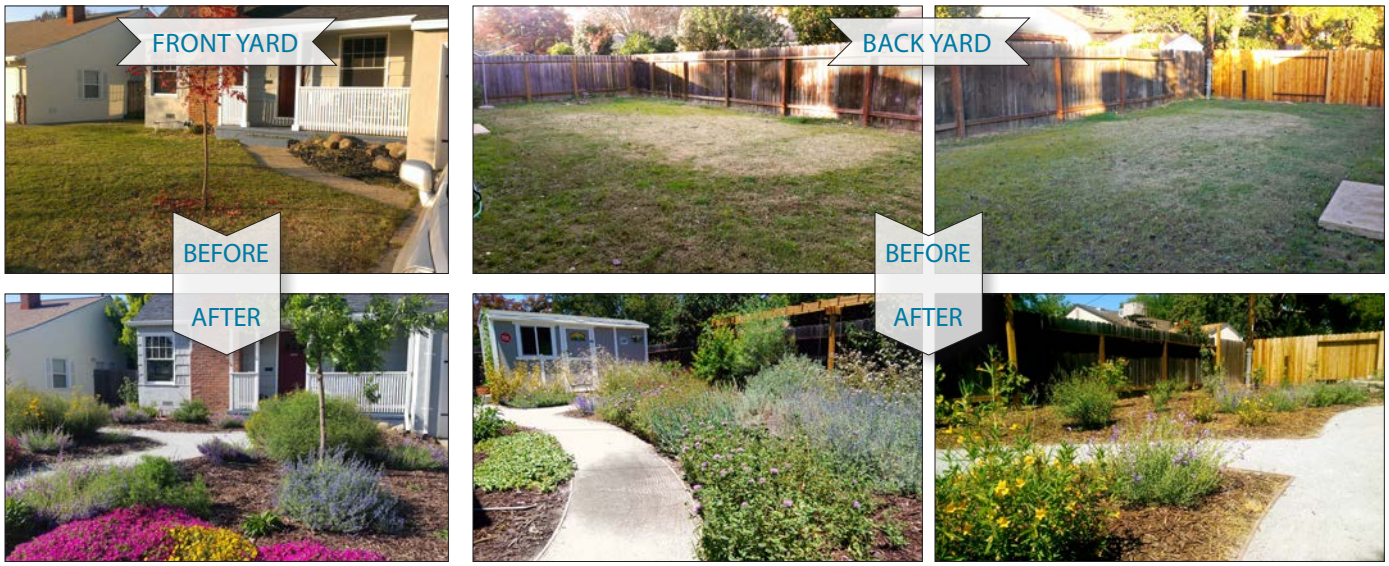
1d. Pollinator-friendly forage diversity by season. **See Tables 1–2 on back cover for a list of some of these plants.*

Max score of 30.

SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score (see items with ❀ on page 4)
SPRING-blooming species. Flowering plants, shrubs, or trees on site that bloom in SPRING (Feb–May) and support bees*. *This includes fruit trees and some flowering weeds (e.g., dandelions), but does not include low-value plants (e.g., Eurasian lilacs), invasive, or noxious species (see Resources).* *Score 1 point for each species, up to 10 points.*	0–10			
SUMMER-blooming species. Flowering plants, shrubs, or trees on site that bloom in SUMMER (Jun–Aug) and support bees*. *This includes some flowering non-native plants (e.g., hollyhocks), but does not include low-value plants (e.g., hybrid peonies), invasive, or noxious species (see Resources).* *Score 1 point for each species, up to 10 points.*	0–10			
FALL-blooming species. Flowering plants, shrubs, or trees on site that bloom in FALL (Sep–Nov) and support bees*. *This includes some flowering non-native plants, (e.g., lavender), but does not include low value plants (e.g., mums), invasive, or noxious species (see Resources).* *Score 1 point for each species, up to 10 points.*	0–10			
Subtotal (1d)				**(1d)**

(1a + 1b + 1c)

Figure 5: This California yard was transformed into a pollinator paradise by planting diverse drought- and fire-resistant native species with overlapping bloom periods.



1e. Pollinator "superfoods", specialist bee plants, and host plants for butterflies and moths. *See Tables 1–2 on back cover for a list of some of these plants. Note that some of these plants may not be appropriate for every region/site.*

Max score of 13.

SCORE ALL OPTIONS THAT APPLY	SCORE	BEFORE	AFTER	Treatment to increase score (see Tables 1–2 on page 12)
Pollinator "superfoods" (★). Certain native plants are known to provide exceptional forage for a wide variety of bees and other pollinators. *Using Tables 1–2, score 0.5 point for each plant spp. present, up to 5 points.*	0–5			
Food for specialist bees (🐝). These plants provide pollen for "specialist" bees that only collect pollen from a narrow range of plants. *Using Tables 1–2, score 0.5 point for each plant spp. present, up to 3 points.*	0–3			
Host plants for butterfly and moth caterpillars (🐛). In the same way monarchs depend on milkweed for caterpillar food, many other butterflies and moths depend on specific host plants for their young to eat. *Using Tables 1–2, score 0.5 point for each plant spp. present, up to 5 points.*	0–5			
Subtotal (1e)				**(1e)**
Foraging Habitat Total				**(1a + 1b +1c + 1d + 1e)**

Section 1: Foraging Habitat

Section 2: Nesting & Overwintering Habitat

Native bees nest & overwinter in a variety of places. Roughly 70% nest in the ground, and about 30% nest in cavities in dead wood, branches, and plant stems. Bumble bee nests are often found under woody plants, tall grasses, or hidden among vegetation. Many insects, including some butterflies, moths, beetles, hoverflies, and queen bumble bees, overwinter underneath leaf litter, in the duff layer of forests, or under loose soils. Diverse habitat features on your site will increase the likelihood of nesting and overwintering success.

2a. Habitat for ground-nesting bees and other insects that seek shelter under ground (Figure 6).

Max score of 25.

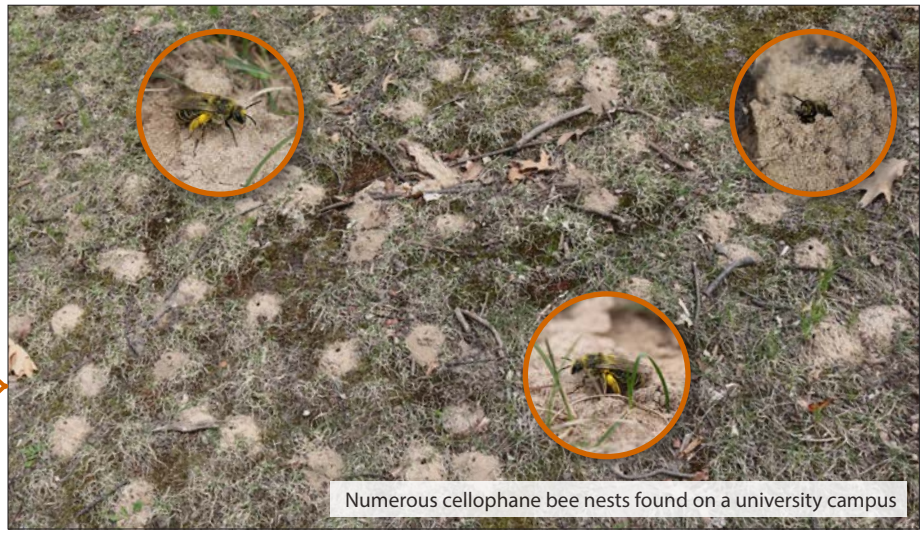
SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score (see items with ↓ on page 4)
1 point for every 10% of vegetated area that is unmown (including gardens, wooded areas, wild spaces)	0–10			
Areas on site with patchy vegetation or bare ground (do not count compacted, pesticide-treated, or highly disturbed ground): **Absent** *(0)* | **Present** *(5)*	0–5			
Clump-forming native bunch grasses in gardens or unmown areas: **Absent** *(0)* | **Sparse** *(2)* | **Abundant** *(5)*	0–5			
Leaf litter left on site in the fall and through the spring (or longer): **Absent** *(0)* | **Sparse** *(2)* | **Abundant** *(5)*	0–5			
Subtotal (2a)				**(2a)**

Figure 6: Although traditionally viewed as "unsightly", lawns with patchy vegetation and bare spots offer critical nesting habitat for ground nesting bees. Unlike ground nesting wasps, these bees are active for a very short period, have very small nests, and are extremely unlikely to sting. In fact, without carefully watching at the right time, you probably won't even notice them sharing your space!

Small sweat bee nesting in gravelly soil

Mining bee nest entrance hidden by leaf litter

Green sweat bee nesting in a bare spot in lawn



Numerous cellophane bee nests found on a university campus

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Section 2: Nesting & Overwintering Habitat *continued*

Section 2: Nesting & Overwintering Habitat

2b. Habitat for cavity-nesting bees and other insects that seek shelter in wood, stems, and other cavities (Figure 7).

Max score of 25.

SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score (see items with ✓ on page 4)
Dead wildflower stems retained & pruned to promote stem-nesting insects: Absent *(0)* | Sparse *(2)* | Abundant *(5)*	0–5			
Native and non-native shrubs pruned to promote stem-nesting insects: Absent *(0)* | Sparse *(2)* | Abundant *(5)*	0–5			
Dead logs and standing dead trees on site: Absent *(0)* | Sparse *(2)* | Abundant *(5)*	0–5			
Brush piles or other woody debris on site: Absent *(0)* | Sparse *(2)* | Abundant *(5)*	0–5			
Rock piles, rock walls, or rock garden edging on site: Absent *(0)* | Sparse *(2)* | Abundant *(5)*	0–5			
Subtotal (2b)				

(2b) (2a)

Figure 7: The majority of wood- or cavity-nesting bees nest in pre-existing tunnels or cavities in dead trees (A), logs (B), and brush, or the centers of pithy-stemmed shrubs (e.g., elderberry, sumac, raspberry [C]) and large-statured prairie plants (D, *shown: Baptisia*). Bumble bees also nest under clump-forming bunchgrasses or other tall grasses (E). Loosely constructed rock walls (F), untreated fence posts (G), and other structures may attract additional bees.

Dead tree with nests

Sweat bee found nesting inside an old log

Small carpenter bee nesting in a raspberry cane

Cut stems on this pithy prairie plant provide excellent nesting sites

Bumble bee nest (and queen) in an area with tall grasses

Leafcutter bee nesting in a wall

Resin bee nesting in a fence post

Nesting & Overwintering Habitat Total (2a + 2b)

Creating Natural Nesting and Overwintering Habitat *for Pollinators and Other Beneficial Insects*

The availability of nesting and overwintering habitat is **one of the most important factors** influencing populations of native bees and other beneficial insects. Yet, traditional landscaping practices rarely leave enough natural resources to support these animals. This Xerces Society document focuses on a variety of natural nesting habitat features and practices, such as our LEAVE THE LEAVES campaign, that can be readily incorporated into most landscapes. For more information, please visit xerces.org/pollinator-conservation/nesting.

Section 3: Pesticide Practices

Pesticide use in lawns, gardens, and landscaping can have negative impacts on pollinator populations.

3. Pesticide use on site.

Max score of 35.

SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score (see items with on page 4)
New landscaping or garden plants are organic, or purchased from nurseries that DON'T use neonicotinoids or other related insecticides in their supply chain.	5			
Use of herbicides, fungicides, insecticides, or other pesticides on site: **Not used** *(30) … proceed to Section 4* | **Used** *(0) … continue to next question*	30			
If pesticides are used on site, they are part of an IPM program that specifically addresses pollinator protection, and focuses on pest prevention strategies and nonchemical pest management methods, before resorting to pesticides. **No** *(0)* | **Yes** *(5) … continue to next question*	5			
If pesticides are used on site, their use is ONLY for managing invasive species that threaten ecosystem health (e.g., spot-treating invasive thistle or buckthorn). **No** *(0)* | **Yes** *(10) … continue to Section 4*	10			

Pesticide Practices Total

Section 4: Community Action

Educating family, friends, and neighbors about pollinator conservation can lead to community-wide changes. Engaging in community science efforts, such as bumble bee monitoring, can lead to advances in our understanding of pollinators and their conservation needs.

4. Community action (Figure 8).

Max score of 40.

SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score (see items with on page 4)
Install a pollinator habitat sign (homemade or otherwise) to explain your pollinator conservation actions to your neighbors	5			
Help create a garden in your neighborhood or share native pollinator plants or seeds with neighbors	10			
Help to organize or host a tour of a pollinator-friendly yard or site	5			
Talk to city officials & local colleges about signing a bee friendly resolution and/or getting certified as a Bee City USA or Bee Campus USA.	5			
Talk about pollinators & their habitat needs to your neighbors, friends, family, local businesses, schools, library, church, etc.	5			
Participate in community science or habitat efforts, such as bumble bee monitoring or invasive species removal (see Resources on next page)	10			

Figure 8: *Examples of community actions:*

Install a pollinator habitat sign

Help create a garden in your neighborhood

Host a tour of pollinator habitat

Participate in a community science project

Community Action Total

Reference Materials & Resources

Pollinator Conservation

100 Plants to Feed the Bees

This book highlights 100 of the most valuable plant genera for pollinators across North America, including both native and select non-native flowers. xerces.org/publications/books/100-plants-feed-bees

Attracting Native Pollinators

A complete guide to the fascinating lives of these vital creatures. The book includes detailed profiles of commonly encountered bee genera and illustrated plant lists to help you to choose the best plants for your region. xerces.org/publications/books/attracting-native-pollinators

Habitat Installation Guides

These regional guidelines provide in-depth practical guidance on how to install and maintain foraging and nesting habitat for pollinators by planting wildflowers or native flowering shrubs. Region-specific plant recommendations are included in the appendices of each guide. xerces.org/pollinator-conservation/habitat-installation-guides

Pesticides in Yards and Gardens

Find the latest guidance on protecting pollinators by minimizing pesticide use and exposure in a residential or urban setting. xerces.org/pesticides/pesticides-your-garden

Nesting & Overwintering Habitat Resources

Find detailed information the nesting requirements of pollinators and beneficial insects and how to provide natural and artificial nesting habitat for pollinators and other beneficial insects in your yard or garden. xerces.org/pollinator-conservation/nesting

Lady Bird Johnson and Xerces Society Plant Database for Pollinators

The Xerces Society partnered with the Lady Bird Johnson Wildflower Center to generate a list of plants that are of special value to pollinators and beneficial insects. www.wildflower.org/project/pollinator-conservation

Flowering Bee Lawns Toolkit

From the University of Minnesota, this page offers guidance on enhancing mown turf with native and non-native flowers for bees. https://z.umn.edu/floweringbeelawn

Native Plant Resources:

Regional Native Pollinator-Friendly Plant Lists:

Recommended native plants that are highly attractive to pollinators and are well-suited for small-scale plantings in gardens, campuses, and in urban greenspaces.

- ***Pollinators:*** xerces.org/pollinator-conservation/plant-lists
- ***Monarchs:*** xerces.org/monarchs/monarch-nectar-plant-guides

***Bringing Nature Home* by Doug Tallamy.**

This eye-opening book compares the value of native and non-native plants to wildlife, and inspires ecologically smarter landscaping with native plants.

North America Native Plant Societies:

Find a group near you to learn more about native plants, invasive species issues, and more. nanps.org/native-plant-societies

Biota of North America Program (BONAP):

Use this comprehensive plant database to determine if a given plant is native to your location. www.bonap.org

USDA–Natural Resources Conservation Service

- ***PLANTS Database:*** Standardized information about the vascular plants of the U.S. and its territories. plants.usda.gov
- ***Introduced, Invasive, and Noxious Plants:*** Federal and state noxious weed, invasive, and introduced plant lists, with links to more information. plants.usda.gov/java/noxiousDriver

Community Action

Bring Back The Pollinators Campaign

Join thousands of others who have pledged to provide habitat and protect pollinators from pesticides. www.bringbackthepollinators.org

Bee City USA / Bee Campus USA

An initiative of the Xerces Society, this program endorses a set of commitments, defined in a resolution, for creating sustainable habitats for pollinators in cities and campuses nationwide. **www.beecityusa.org**

Bumble Bee Watch

Contribute your bumble bee sightings to this app or website to help scientists better understand bumble bee distribution and conservation need. www.bumblebeewatch.org

Native Bee Monitoring Guides & Tools

Developed by the Xerces Society, these guides provides instructions for assessing pollinator habitat quality and diversity by monitoring native bees. xerces.org/xerces-bee-monitoring-tools

Xerces Community Science Opportunities

Find a variety of community science projects related to bumble bees, milkweed, monarchs, and more. xerces.org/community-science/

Citsci.org

Search this list of community science projects for keywords you are interested in, such as your state and "pollinators" or "bees".

iNaturalist.org

A website and app to help you document the diversity around you, and arrive at correct identifications of the wildlife you are seeing.

Figure 9: Due to their long co-evolutionary history in wild ecosystems, native plants like wingstem (*Verbesina alternifolia*) are frequently better floral resources for native pollinators (e.g., bumble bees and sweat bees) than non-native ornamental plants.

Xerces Society Recommended High Value Plants for Pollinators

★ **POLLINATOR "SUPERFOODS"**—Certain native plants are known to provide exceptional forage for a wide variety of bees and other pollinators, including monarchs. See table below for a list of some of these plants.

FOOD FOR SPECIALIST BEES—Many native bees are "specialists," only collecting pollen and other resorces from specific plants. See table below for a list of plants known to provide food for a number of specialist bees.

LEPIDOPTERA HOST PLANTS—The caterpillars of many butterflies and moths can only feed on specific plants. For example, great spangled fritillary larvae only feed on violet leaves. Some plants support an amazing diversity of lepidoptera; e.g., oaks support hundreds of butterflies and moths species. Since most native plants support at least one butterfly or moth, we use for a genus supports over five species ***OR*** one species that doesn't eat anything else.

NOTE: *These lists are not exhaustive—see Resource section to identify additional native plants for your site. Some of these plants may not be appropriate for every region/site.*

TABLE 1: SUPERFOODS & HOST PLANTS

HIGH VALUE PLANTS Appropriate for *Most* Regions

Native Wildflowers

- ***Agastache*** [giant hyssop]—★
- ***Asclepias*** [milkweed]—★
- ***Cirsium*** [thistle (native)]—★
- ***Echinacea*** [purple coneflower]—
- ***Euthamia*** [goldentop]—★
- ***Helianthus*** [sunflower]—★
- ***Lupinus*** [lupine]—
- ***Monarda/Monardella*** [beebalm]—★
- ***Penstemon*** [beardtongue]—
- ***Ratibida*** [coneflower]—
- ***Salvia*** [sage]—
- ***Solidago*** [goldenrod]—★
- ***Symphyotrichum*** [aster]—★
- ***Verbena*** [vervain]—
- ***Viola*** [violets]—

Native Shrubs & Trees

- ***Acer*** [maple]—★
- ***Amelanchier*** [serviceberry]—★
- ***Amorpha*** [leadplant/false indigo]—★
- ***Ceanothus*** [wild lilac]—★
- ***Cercis*** [redbud]—
- ***Cornus*** [dogwood]—
- ***Pinus*** [pine]—
- ***Prunus*** [wild plum]—★
- ***Quercus*** [oak]—
- ***Rhus*** [sumac]—
- ***Ribes*** [currant]—★
- ***Rosa*** [wild rose]—★
- ***Rubus*** [raspberry/blackberry]—★
- ***Salix*** [willow]—★
- ***Sambucus*** [elderberry]—
- ***Spiraea*** [spirea/meadowsweet]—★
- ***Vaccinium*** [blueberry/cranberry]—★
- ***Viburnum*** [arrowwood/viburnum]—★

Native Grasses

- ***Andropogon*** [bluestem]—
- ***Bouteloua*** [grama]—
- ***Carex*** [sedges]—
- ***Elymus*** [wheatgrass, wildrye]—
- ***Hierochloe*** [sweetgrass]
- ***Koeleria*** [Junegrass]—
- ***Muhlenbergia*** [muhly]—
- ***Schizachyrium*** [little bluestem]—
- ***Sporobolus*** [dropseed]—

HIGH VALUE PLANTS for *Specific* Regions

Pacific Northwest

- ***Baccharis*** [coyotebrush]—★
- ***Berberis*** [barberry]—★
- ***Clarkia*** [clarkia]—★
- ***Cleome*** [bee plant]—★
- ***Fragaria*** [strawberry]—
- ***Grindelia*** [gumweed]—★
- ***Helenium*** [sneezeweed]—★
- ***Phacelia*** [phacelia]—★
- ***Rhamnus*** [buckthorn]—
- ***Sidalcea*** [checkerbloom]—★

Great Plains & Intermountain West

- ***Callirhoe*** [poppymallow]—
- ***Dalea*** [prairie clover]—★
- ***Ericameria*** [goldenbush, rabbitbrush]—★
- ***Eriogonum*** [wild buckwheat]—
- ***Geranium*** [wild geranium]—
- ***Heterotheca*** [false goldenaster]—★
- ***Machaeranthera*** [tansyaster]—★
- ***Oenothera*** [evening primrose]—
- ***Sphaeralcea*** [globemallow]—★
- ***Vernonia*** [ironweed] —★

Great Lakes & Northeast

- ***Cephalanthus*** [buttonbush]—★
- ***Dalea*** [prairie clover]—★
- ***Eutrochium*** [joe pye weed]—★
- ***Ilex*** [holly]—★
- ***Liatris*** [blazing star]—★
- ***Packera*** [ragwort]—
- ***Pycnanthemum*** [mountain mint]—★
- ***Silphium*** [cup plant]—★
- ***Zizia*** [Alexanders, zizia]—★
- ***Carya*** [hickory]—

Southwest & California

- ***Arctostaphylos*** [manzanita]—★
- ***Baccharis*** [coyotebrush]—★
- ***Berberis*** [barberry]—★
- ***Bidens*** [beggarticks]—★
- ***Eriogonum*** [wild buckwheat]—
- ***Grindelia*** [gumweed]—★
- ***Larrea*** [creosote bush]—★
- ***Monardella*** [monardella]—★
- ***Phacelia*** [phacelia]—★
- ***Salvia*** [sage]—

Midwest & South Central

- ***Boltonia*** [doll's daisy/false aster]—★
- ***Chamaecrista*** [partridge pea]—
- ***Eutrochium*** [joe pye weed]—★
- ***Helenium*** [sneezeweed]—★
- ***Liatris*** [blazing star]—★
- ***Pycnanthemum*** [mountain mint]—★
- ***Silphium*** [cup plant]—★
- ***Tillia*** [basswood]—
- ***Verbesina*** [wingstem]—★
- ***Zizia*** [Alexanders, zizia]—★

Southeast & Mid-Atlantic

- ***Baptisia*** [wild indigo]—
- ***Coreopsis*** [tickseed]—
- ***Desmodium*** [tick-trefoil]—
- ***Eutrochium*** [joe pye weed]—★
- ***Gaillardia*** [blanketflower]—
- ***Helenium*** [sneezeweed]—★
- ***Hibiscus*** [rosemallow]—
- ***Ilex*** [holly]—★
- ***Liatris*** [blazing star]—★
- ***Vernonia*** [ironweed]—★

GROWTH FORMS: Wildflower/Forb () Shrub/Tree () Grass/Sedge ()

TABLE 2: EDIBLE LANDSCAPING PLANTS WITH VALUE TO POLLINATORS

- ***Abelmoschus esculentus*** [okra]
- ***Allium****† [chives, garlic, leek, onions, shallot]
- ***Amelanchier***† [juneberry, serviceberry]
- ***Asimina***† [pawpaws]
- ***Anethum graveolens**** [dill]
- ***Brassica**** [broccoli, cabbage, cauliflower, kale]
- ***Calendula*** [calendula]
- ***Capsicum***† [peppers (bell/chili, habanero)]
- ***Castanea***† [chestnut, chinquapin]
- ***Citrullus*** [pine melon, watermelon]
- ***Citrus*** [lemon, lime, tangerine]
- ***Coriandrum sativum**** [coriander/cilantro]
- ***Corylus***† [hazelnut]
- ***Cucumis*** [cucumber, melon]
- ***Cucurbita***† [pumpkin, squash]
- ***Diospyros virginiana***† [common persimmon]
- ***Fagopyrum esculentum**** [buckwheat]
- ***Foeniculum vulgare**** [fennel]
- ***Fragaria***† [strawberry]
- ***Helianthus annuus***† [sunflower]
- ***Lavandula*** [lavender]
- ***Malus***† [apple, crab apple]
- ***Matricaria**** [chamomile]
- ***Mentha****† [mint]
- ***Ocimum**** [basil]
- ***Opuntia***† [prickly pear]
- ***Origanum vulgare**** [oregano]
- ***Passiflora***† [passionfruit]
- ***Persea americana*** [avocado]
- ***Phaseolus***† [bean (common, scarlet runner, wild)]
- ***Prunus***† [almond, apricot, cherry, peach, plum]
- ***Pyrus*** [pear]
- ***Ribes***† [currant (black, golden, red)]
- ***Rosa***† [rose (dogrose, hybrid tea, wild)]
- ***Rubus***† [blackberry, raspberry]
- ***Sambucus***† [elderberry (black, blue, red)]
- ***Solanum***† [eggplant, potato, tomato]
- ***Vaccinium***† [blueberry, cranberry]
- ***Vicia***† [fava bean, vetch]

NOTES: *Must be allowed to bolt/flower †Some or all members of the genus are NATIVE to North America