



BUTTERFLY  
PAVILION

10 Steps to a

# Pollinator Garden



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## Introduction

Butterfly Pavilion's horticulture team cares for 10 acres of pollinator habitat at our facility as well as pollinator conservation projects throughout the Colorado Front Range. We love seeing all the different bees, butterflies and other pollinators that call these habitats home, and for the past 25 years, we've learned how best to provide the food, shelter and other resources these animals need. We know it's important to share this information with our community in order to make a difference for pollinators.

There are at least 200,000 species belonging to four insect groups that pollinate flowers, around 20% of all known insect species. Pollinators include animals as different as the majestic two-tailed swallowtail and the fuzzy Hunt's bumblebee, but they all provide an important service.

Pollinators are animals that transfer pollen from one flower to another, allowing flowering plants to reproduce more effectively. Between 60% and 80% of flowering plants require an animal to make viable seeds. In order to attract pollinators, flowering plants sport a variety of colors, fragrances and rewards. These traits are, of course, attractive to human gardeners as well!

Pollinators need our help right now. Worldwide, scientists are recording declining pollinator populations due to habitat loss, pesticide use and other factors. One of the most positive steps you can take is to plant your landscape to support pollinators. The great news is that pollinator habitat gardens are easy, adaptable and lots of fun! Imagine enjoying a garden full of flowers and busy with butterflies. This guide presents ten steps to get you to that pollinator haven.

*Please note: This garden guide lists plants and pollinators specific to the Colorado Front Range, but the general concepts can be adapted for other regions as well.*

# Inventory



## **Step 1: Know Your Space**

Pollinator habitat can fit in anywhere, from small flowerbeds in urban areas to extensive prairie plantings. Before putting that first shovel in the ground, you'll want to understand the potential challenges and opportunities of your landscape. This process is called a site assessment, and will help you choose the right plants and create a garden that is just right for you. Here are some questions you should answer before designing your pollinator garden.

### **Landscape Conditions**

#### **1. Soil**

Is your soil heavy clay, sand or loam? Some plants need better drainage than others, so if you don't already know your soil type, you can get a soil test through your county extension agent.

#### **2. Water**

How are you planning to water this garden? Is an irrigation system already in place, or are you starting from scratch? Our favorite native pollinator plants conserve water once established, but you should plan to water for at least the first two years.

#### **3. Light and shelter**

How many hours of sunshine does your space get? Is it in the morning or afternoon? Is your garden site the last to melt in the spring or protected by structures from the wind? Pollinators tend to visit sunny spots - that's where most of the flowers are.

## Uses for Space

### 1. Existing elements

How do you use the space currently? Will you have to remove lawn or other plants? Are you hoping just to add some pollinator plants to an existing garden, or are you considering a complete overhaul?

### 2. Care

How much time and effort do you have available to care for a garden? Are there some tasks you would like to avoid altogether?

### 3. Enjoyment

What would help you spend more time in the garden? Don't forget to include these elements, whether that means seating or a meandering pathway, in your design.





## Step 2: Know Your Pollinators

The common habitat gardening mantra is, “plant it, and they will come.”

However, it helps if you know what pollinators you are likely to see in your area. Pollinators show plant and habitat preferences, and you can tailor your garden to reflect these preferences by choosing certain plants and adjusting the landscape to support different life cycle requirements.

The bees, butterflies and other insects that are in your area depend on your location, the type of landscape you are surrounded by, including your altitude. When you have a chance, pay attention to the insects you already see visiting flowers nearby. Then, identify them by consulting field guides and online resources. You may even find yourself talking to neighbors about what they have seen.

**Here are some common pollinator types in the Denver metro area you may see but this is by no means an exhaustive list!**

# Bees

With over 940 species documented in Colorado, bees are the pollinators par excellence. Honeybees are just one member of this incredible tribe of pollinators!



## Honeybees (*Apis mellifera*)

- Domesticated, introduced from Europe
- Division of labor, overlap of generations and large colony size make it the ultimate pollinator for crops.
- Recent declines have forced farmers to consider native bees and other pollinators.
- Attractive plants: Russian sage, crabapple, hawthorn, lavender, oregano

## Sweat bees (*Halictidae*)

- Often green and shiny
- 2 - .4" long
- Most abundant bees
- Attracted to sweat
- Solitary to semisocial
- Nest in ground or rotting wood
- **Attractive plants:** black-eyed Susans, goldenrods, vervains, blanket flower, spiderwort, leadplant



## Bumble bees (*Bombidae*)

- Stout and hairy with yellow, orange or black bands
- Over 20 species in Colorado
- Between .4-.9" long
- Often underground
- Small colonies with overwintering queen
- **Attractive plants:** penstemon, salvia, monarda





### Digger bees (Anthrophoridae)

- .25 - 1.0" long
- Robust and fast-flying
- Between .4-.9" long
- Long tongues and long antennae
- Solitary, nesting in ground
- **Attractive plants:** members of the sunflower family

### Leafcutter bees (Megachilidae)

- .4 - .8" long
- Stout, grayish, with pale stripes on the abdomen
- Between .4-.9" long
- Carry pollen under their bellies
- Solidary, nesting in preexisting cavities
- Cut leaf pieces for brood chamber, need rose relatives
- **Attractive Plants:** Members of the mint family, sunflowers, globe thistle



### Miner bees (Andrenidae)

- .3 - .7" long
- Black or metallic blue or green with pale bands on abdomen
- Solitary ground-dwellers, but nests found in groups
- Emerge in the spring
- **Attractive plants:** fragrant sumac, American plum, serviceberry, silver buffaloberry, coneflower, leadplant

## Butterflies & Moths

Common all over the world, most of us are familiar with the life cycle of these insects because their caterpillars can be found throughout our gardens.

### Swallowtails (Papilionidae)

- Larger wingspan, wings often have little tags or tails, black & yellow
- Found in grasslands & meadows, gardens, open areas
- Between .4-.9" long
- Some known for patrolling "territories" and returning each day
- **Attractive plants:** long tubular flowers like penstemon & salvia



### Blues (Lycaenidae)

- Smaller butterflies (1" wingspan)
- Iridescent blues & grays, often spotted on underside of wings
- Found in Foothills, often patrol along trails & perch on grasses
- Blues can sometimes have threadlike tails on their hindwings that they can manipulate to look like antennae to fool predators.
- Larva are often protected by ants
- **Attractive plants:** plants with clusters of smaller flowers like buckwheat and yarrow



## Whites & Sulphurs (Pieridae)

- Smaller butterflies (1-2" wingspan) usually yellow or white
- Found in grasslands, gardens, roadsides & ditches
- Fast reproducers, a female can lay over 500 eggs
- Seen in early spring & late fall
- **Attractive plants:** zinnias & other flowers with landing platform, weeds like sweet clover & alfalfa



## Skippers (Hesperiidae)

- Smaller butterflies (1-1 1/2" wingspan)
- Distinctive "skipping" flight
- Orange & brown with hooked antennae
- Found in open, grassy areas
- Skippers are the "teddy bears" of the butterfly world with big eyes & fat furry bodies
- **Attractive plants:** plants with clusters of smaller flowers like yarrow, butterfly bush, leadplant and coneflowers



## Sphinx Moths (Sphingidae)

- Torpedo-shaped body, long narrow wings
- Hovering flight with long proboscis
- Found in gardens, roadsides & ditches
- Often mistaken for hummingbirds
- **Attractive plants:** evening-blooming flowers with sweet scents like four o'clocks and flowering tobacco



## Brush-foot (Nymphalidae - including milkweed butterflies & satyrs)

- Broad family, ranging from small to large butterflies, many have reduced front pair of legs, so they look like they have 4 legs instead of 6, often colored in combinations of orange, black
- Found in open forests, grasslands, gardens, roadsides & ditches, wetlands
- Bright colors in both adult & larval phases warn predators about the toxins they ingest in the plants they eat as caterpillars
- **Attractive plants:** flowers that provide landing platforms, such as milkweed, verbena, coneflower & other asters



*Wood Satyr*

*Monarch Butterfly*



# Design



## Step 3: The Right Plant in the Right Place for Easier Care

Many pest or disease problems can be avoided if plants have the growing conditions they need in the first place. When designing your pollinator garden, refer to your site assessment (Step 1: Know Your Space) and match the plants that are best suited to your light, soil and water conditions. Pay attention to microclimates in your property – one garden site may include both steep rocky areas and lower moist spots.

- Examples for heavy clay include false indigo, asters, black-eyed Susans, coneflower and Russian sage
- Examples for sandy soils include butterfly weed, lavender, stonecrop and salvia
- Examples for full sun include penstemon, agastache, salvia and sunflowers
- Examples for part shade include columbines, bee balm, mint and yarrow
- Allow your new plants space to assert themselves. Some plants are more aggressive and will shade out other species or outcompete for water and other resources.
- Use high and low spots in your landscape to your advantage. Lower spots or areas at the base of a slope will have more moisture and more shelter – an opportunity to try plants that need more of both.





## Step 4: Layer Your Plantings for Shelter

Bee houses and bug hotels can be a helpful resource for some species, but many wild pollinators prefer to roost or hide from predators in trees, shrubs and vines. Including plants of different growth habits allows different pollinators to find the shelter they need. Diversity of plant material will support a diversity of pollinators – you are, in effect, modeling your garden on the complex natural environments that pollinators prefer. In your pollinator garden, a sunny, open foraging area is key, but don't forget:

- If you have the space, include shrubs and bunch grasses of different heights in your garden. Having this “structural complexity” also makes the garden more interesting to look at.
- Plant sheltering plants to block strong winds and create a windbreak.
- Vines on trellises or fences can also provide a safe place for pollinators to spend the night or get out of a storm.
- Groundcovers and leaf litter create shelter for larva and ground-dwelling pollinators, such as beetles.
- Bee houses should be south-facing, at least 6” deep and made of untreated wood or bamboo.
- Butterfly houses rarely provide shelter for butterflies, but they provide shelter for spiders and wasps. A few well-placed shrubs or small trees will be a better choice for butterflies.

## Step 5: Maximize Foraging Area for Efficiency

Pollinating insects have superb eyesight and senses of smell that help them to find food sources. Large groupings of the same plant are like a big billboard, advertising that your garden is where pollinators want to be. Planting in clumps also allows pollinators to be more efficient as they forage. Many bees, once they figure out how to access pollen or nectar in one type of flower, will keep visiting that type until they hit one that is empty. That's the signal for them to switch to a new type of flower.

- Depending on your available space, try grouping between 5-13 individual plants of the same species or type together in a swath. This not only helps the pollinators, but will make the design more intentional and attractive.
- Larger shrubs or trees can be a “clump” all on their own, especially if they are heavy bloomers.
- So that your entire garden looks great throughout the year, distribute early-blooming species and late-blooming species throughout the garden. For example, as bulbs or early-blooming shrubs are finishing up, make sure that the same part of the garden also includes mid-season perennials that can fill in the garden.





# Plant Selection



## Step 6: Choose Native Plants for Native Pollinators

Generalist pollinators may visit a wide range of flowering plants, but native plants are important to a pollinator habitat for a couple of reasons. The plants that are well-adapted to a particular region are the species that native pollinators are themselves best adapted to visit. Native species tend to have the fragrances, chemical compositions, floral structures and rewards that most benefit native pollinators. Cultivars and hybrids often have an increased number of petals, different colors and or even different bloom times, making them less attractive or harder to forage from.

The other reason to go native is that native plants are best suited to our soils and climate, which make them easier to care for in the long term. Native plants bring a lot of benefits to a garden, including a true sense of place. Your garden certainly won't be confused with one in Connecticut or California! You don't necessarily have to be confined to only growing native plants – many species work well with other species from similar regions of the world. For the most benefit, aim for a majority native landscape.

Native plants are becoming more available, as gardeners discover these benefits. Be sure to ask your local nursery about what native plants they have in stock. These are the native plants that Butterfly Pavilion gardeners like the most for habitat gardens – we've noticed that pollinators really like them, too.



<b>Botanical Name</b>	<b>Common Name</b>	<b>Height</b>	<b>Spread</b>	<b>Color</b>	<b>Bloom</b>
<i>Achillea lanulosa</i>	Woolly yarrow	1' - 2'	1'	White	Summer
<i>Agastache foeniculum</i>	Anise hyssop	2'	18"	Blue	Summer
<i>Aquilegia chrysantha</i>	Golden Columbine	36"	24"	Yellow	Late spring
<i>Asclepias speciosa</i>	Showy milkweed	2'	12"	Pink	Late spring
<i>Asclepias tuberosa</i>	Butterfly Weed	1'	1'	Orange	Summer
<i>Callirhoe involucrata</i>	Poppy mallow	6'	18"	Red-violet	Summer
<i>Chrysothamnus nauseosus</i> <i>ssp. nauseosus</i>	Dwarf blue rabbitbrush	2'	2'	Yellow	Fall
<i>Coreopsis tinctoria</i>	Plains coreopsis	1'	1'	Yellow/Red	Summer
<i>Dalea purpurea</i>	Prairie clover	18"	18"	Purple	Summer
<i>Ericameria nauseosus</i> <i>ssp. graveolens</i>	Tall green rabbitbrush	4'	4'	Yellow	Fall
<i>Erigeron speciosus</i>	Aspen daisy	1'	1'	White	Summer
<i>Fallugia paradoxa</i>	Apache plume	4'	4'	White	Summer
<i>Gaillardia aristata</i>	Blanket flower	1'	1'	Red/ Yellow	Summer
<i>Helianthus annuus</i>	Annual Sunflower	10'	2'	Yellow	Summer
<i>Helianthus maximilianii</i>	Maximillian Sunflower	6'	4'	Yellow	Fall
<i>Heterotheca villosa</i>	Hairy golden aster	6"	6"	Yellow	Summer
<i>Iris missouriensis</i>	Blue flag iris	2'	2'	Blue-purple	Spring
<i>Liatris punctata</i>	Spotted gayfeather	18"	1'	Red-violet	Summer
<i>Lupinus argenteus</i>	Silvery lupine	18"	18"	Purple	Summer
<i>Machaeranthera canescens</i>	Hoary tansyaster	2'	2'	Purple	Late summer
<i>Mahonia repens</i>	Oregon-grape	4'	3'	Yellow	Spring
<i>Mentha arvensis</i>	Wild mint	2'	2'	White	Summer
<i>Mimulus lewisii</i>	Monkeyflower	18"	18"	Yellow	Summer

<b>Botanical Name</b>	<b>Common Name</b>	<b>Height</b>	<b>Spread</b>	<b>Color</b>	<b>Bloom</b>
<i>Monarda fistulosa</i>	Wild bergamot	<b>3'</b>	<b>2'</b>	<b>Pink</b>	Summer
<i>Orzyopsis hymenoides</i>	Indian ricegrass	<b>3'</b>	<b>2'</b>	<b>Tan</b>	Summer
<i>Penstemon barbatus</i>	Beardtongue	<b>3'</b>	<b>2'</b>	<b>Red</b>	Summer
<i>Penstemon secundiflorus</i>	One-sided penstemon	<b>1'</b>	<b>1'</b>	<b>Pink/ purple</b>	Summer
<i>Penstemon strictus</i>	Beardtongue	<b>2'</b>	<b>2'</b>	<b>Purple</b>	Late spring
<i>Penstemon virens</i>	Greenleaf penstemon	<b>1'</b>	<b>1'</b>	<b>Blue-purple</b>	Summer
<i>Physocarpus monogynus</i>	Mountain ninebark	<b>6'</b>	<b>6'</b>	<b>White</b>	Spring
<i>Potentilla rivalis</i>	Brook cinquefoil	<b>2'</b>	<b>2'</b>	<b>Yellow</b>	Summer
<i>Prunus pumila ssp. besseyi</i>	Sand cherry	<b>2'</b>	<b>3'</b>	<b>White</b>	Spring
<i>Prunus virginiana</i>	Chokecherry	<b>30'</b>	<b>25'</b>	<b>White</b>	Spring
<i>Prunus virginiana melanocarpa</i>	Western chokecherry	<b>30'</b>	<b>25'</b>	<b>White</b>	Spring
<i>Ratibida columnifera</i>	Prairie coneflower	<b>18'</b>	<b>18'</b>	<b>Yellow</b>	Summer
<i>Ribes aureum</i>	Golden currant	<b>5'</b>	<b>5'</b>	<b>Yellow</b>	Spring
<i>Rosa woodsii</i>	Wood's rose	<b>5'</b>	<b>5'</b>	<b>Pink</b>	Summer
<i>Rubus deliciosus</i>	Boulder raspberry	<b>3'</b>	<b>3'</b>	<b>White</b>	Spring
<i>Solidago spp.</i>	Goldenrod	<b>3'</b>	<b>3'</b>	<b>Yellow</b>	Late summer
<i>Sphaeralcea coccinea</i>	Scarlet globemallow	<b>1'</b>	<b>1'</b>	<b>Orange</b>	Summer
<i>Symphoricarpos albus</i>	Snowberry	<b>3'</b>	<b>3'</b>	<b>White/ pink</b>	Summer
<i>Tradescantia occidentalis</i>	Spiderwort	<b>2'</b>	<b>2'</b>	<b>Purple</b>	Summer
<i>Verbena bipinnatifida</i>	Wild verbena	<b>1'</b>	<b>2'</b>	<b>Purple</b>	Summer
<i>Verbena hastata</i>	Blue vervain	<b>3'</b>	<b>2'</b>	<b>Purple</b>	Summer
<i>Zinnia grandiflora</i>	Plains zinnia	<b>1'</b>	<b>1'</b>	<b>Yellow</b>	Summer

## Step 7: Create a Nursery for Baby Pollinators

When we think of pollinators, we often envision their adult forms, but it is important to remember that our insect pollinators have complex life cycles with different needs throughout. While caterpillars and grubs may not seem as glamorous as butterflies and bees, if you want one, you need the other. As well as including lots of colorful blooms, you'll want to include the other plants that support pollinator reproduction. Specific plants and garden conditions feed and shelter baby pollinators.

- About 30% of bees nest in hollow or soft wood tunnels. Drill holes of different sizes (5/16" to 3/32" in old logs and place upright in a south-facing direction. Plant shrubs with soft stems, such as sumac, raspberries, elderberries and dogwood
- Less than 70% of native bees nest in the ground. These bees need open areas, especially in well-drained, sunny spots. Remove thatch, but leave a few plants to prevent erosion. Many of these bees may only be active a few weeks a year.
- If possible, leave some moist, messy and sheltered places for beetles and flies – this reproduces the conditions they need for their life cycles.
- Finally, some of the most complex plant-pollinator relationships are found in butterflies and moths that require specific larval food plants for reproduction. These species have developed tolerances to the chemical compounds plants make for their own defense. The monarch-milkweed relationship is probably the most famous example, but there are many others.
- If you include host plants in your garden, keep in mind that caterpillars are very hungry! One monarch caterpillar can eat ten milkweed plants! Plant enough so that caterpillar chewing doesn't impact the look of your garden in a way you don't like.



<b>Butterfly</b>	<b>Host Plant</b>
Two-tailed swallowtail ( <i>Papilio multicaudatus</i> )	Chokecherry, ash trees
Eastern black swallowtail ( <i>Papilio polyxenes</i> )	Dill, fennel, rue
Variegated fritillary ( <i>Euptoieta claudia</i> )	Pansies, violets, stonecrop
Painted lady ( <i>Vanessa cardui</i> )	Thistles, sunflowers
Clouded sulfur ( <i>Colias philodice</i> )	Vetch, sweet clover
Melissa blue ( <i>Lycaeides melissa</i> )	Lupines, prairie clover
Silver-spotted skipper ( <i>Epargyreus clarus</i> )	Leadplant, honey locust
Mourning cloak ( <i>Nymphalis antiopa</i> )	Cottonwoods, willows



## Step 8: Plant a Rainbow of Flowers for Diversity

Pollinating insects vary in their behavior, mouthparts, vision and the rewards they seek. This variation influences what flowers attract them. A pollinator garden that aims to increase biodiversity will have flowering plants that appeal to bees, butterflies, moths, beetles, flies and hummingbirds. This means choosing a variety of different colors, shapes and sizes of flowering plants. Variety is the spice of life!

Pollinators are by no means confined by these preferences; hungry pollinators will often find a way to get the pollen or nectar they crave, even from flowers that don't fit these descriptions. However, these plant-pollinator preferences can help you decide what plants to select.

- For both landscape health and biodiversity, try to plant plants from at least 3 plant families. For example, a landscape that features members of the sunflower family, the mint family and the rose family will fare much better in the case of disease, and have plants with different kinds of flowers, attracting more pollinators.
- Pollinators come in different sizes – be sure to feature plants with larger flowers, smaller flowers to accommodate big bumblebees and tiny sweat bees alike.
- Pollinators also behave differently during foraging – butterflies like to perch, while hummingbirds hover. Bees are master manipulators, able to crawl inside a flower to get the nectar and pollen reward. For that reason, pay attention to the floral shape as well as color when including it in your design. A diverse pollinator garden may have a variety of shapes: “landing platforms”, tubes, discs or cups, clusters, spikes – all for different pollinators.
- Fragrance plays a huge role in attracting many insect pollinators. Choosing species that have a strong, sweet or spicy floral fragrance (as opposed to cultivars that have bred out the scent) means your garden will be more enticing to bees and butterflies.

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- Did you know that what we think of as the flower of a sunflower actually contains clusters of hundreds of tiny tubular flowers? For that reason, these plants are attractive to many different pollinators, who can access the nectar inside easily.





<b>Pollinator</b>	<b>Active Traits</b>	<b>Where we've seen them at Butterfly Pavilion</b>
<i>Smaller solitary bees</i>	Fragrant, clusters of open flowers in yellows, purples	Chokecherry, asters, sunflowers, mint
<i>Larger bees</i>	Fragrant, blues, purples and yellows, tubular	Penstemon, salvia, sunflowers, lavender, bee balm
<i>Beneficial wasps</i>	Clusters of light-colored flowers, easy to access nectar	Lovage, Joe Pye Weed, rabbitbrush, mint, oregano, swamp milkweed
<i>Butterflies</i>	Fragrant, spikes or landing platforms, tubular, pinks, purples, oranges, yellows	Penstemon, salvia, butterfly bush, coneflower, black-eyed susan, bee balm, vervain
<i>Moths</i>	Fragrant, tubular or trumpet-shaped, pale color or white	Evening primrose, datura, four o'clock, flowering tobacco
<i>Beetles</i>	Cup-shaped or shallow, dull or pale color and fruity or rotting fragrance, exposed pollen	Rabbitbrush, goldenrod, sunflower, lovage
<i>Flies</i>	Broad, flat, clusters of small flowers, yellow, white or purple, funky fragrance	Fennel, dill, moon carrot, yarrow, elderberry
<i>Hummingbirds</i>	Spikes of long tubular, no fragrance, reds or purples	Penstemon, salvia, red hot poker, California fuchsia

## Step 9: Extend the Bloom Season for Early and Late Arrivals

In our region, we may see honeybees searching for food on a warm day in February, and the last monarch butterfly fly through in early November. That puts a lot of pressure on gardeners to keep the food blooming as early and as late as possible. The benefit of extending your season is that your garden will have more interest for longer, too – it's not just one big show in late May, and then a dull garden the rest of the year. Enjoy your garden from the first bulbs that appear in the spring to the last riot of asters in the fall.

Colorado weather can be tricky in the spring and fall months, but our native species can bloom despite snow, hail and wind. If you choose to include some nonnative species, consider protection when storms are forecast. Covering plants with tarps and bringing plants into sheltered areas are ways to ensure that these plants can continue to perform for you.

- Annuals in pots, especially if kept deadheaded, can continue to provide nectar for generalist pollinators until the first frost – with protection, as long as we still have warm daytime temps.
- For each season, you still want to provide a diversity of flowers. Look at the bloom season information for the plants you want to include, and try to have at least 3 species blooming at any one time. Especially choose those species that feed the pollinators most likely to be active at that time, i.e. honeybees in early spring, beetles in fall.
- For many species, such as blanket flower and butterfly bush, deadheading will significantly extend the season. Make this a regular chore.
- Below is a table with some of the plants that attract the most pollinators for each season in the Butterfly Pavilion gardens. Natives are highlighted with an N.

<b>Spring</b>	<b>Summer</b>	<b>Fall</b>
<i>Bulbs – crocus, squill, species tulips, alliums</i>	Agastache	Rabbitbrush - N
<i>Golden currant - N</i>	Monarda fistulosa - N	Maximilian sunflower
<i>Fragrant sumac - N</i>	Sunflowers -N	Goldenrod - N
<i>American plum/chokecherry -N</i>	Verbena bonariensis	Asters - N
<i>Salvia officinalis</i>	Apache plume - N	Pitcher sage - N
<i>Penstemon -N</i>	Swamp milkweed - N	Sneezeweed - N



# Maintenance



## Step 10: Maintain Your Garden for Healthy Habitats

A diverse pollinator garden in which the plants have been especially selected for the site will most likely require less intensive maintenance than a conventional landscape. Layered and healthy plantings will attract beneficial predators that keep pests at bay. Native species can thrive in our native soils and climate and are less likely to be knocked down by diseases. Finally, habitat gardens, with so many kinds of plants arranged to provide niches for wildlife, make any pest damage that does occur less visible.

The key for a healthy habitat is to start with healthy plants and focusing on great plant health care. Pay attention to the soil, water and light requirements for your plants and tailor your care to make your plants as happy as you can make them. Use best practices to prune and trim – avoiding injury for both yourself and your plants. Sometimes a plant doesn't work out in a particular site – consider this a signal to search for something better suited, not a judgment of your moral fiber!

- Pesticides are detrimental to many pollinators and are best avoided. Investigate other methods such as physical removal of pests, beneficial predators, or re-evaluate your care regimen.
- The best way to keep pests, weeds or disease from overtaking your garden is to be very familiar with what is going on throughout the season. Spend time in your garden and note any potential problems. Striking when infestations are small can prevent a lot of labor and expense.
- Sanitation is important! Be sure to clean your tools to prevent spreading diseases from one plant to another.
- Some weeds provide resources for pollinators, while others are best addressed while small. Be familiar with your state's Noxious Weed List and prioritize the management of those species, so that your garden can achieve your goals.
- Invest in tools you like to use – at Butterfly Pavilion, we love our hori horis and hand hoes to take care of baby weeds before they get too big.

- Time your maintenance tasks so that they don't interfere with pollinator life cycles. Instead of cutting down perennials in autumn, allow them to provide shelter for overwintering pupa and nesting bees. Wait until you see the new spring growth before cleaning up your garden. The exception is anything diseased – that should be removed immediately.
- Avoid mowing meadows when pollinators are at their peak in the summer – wait until later in the year, when pollinators have already completed their breeding
- Allow plants to have their natural form to provide more niches for pollinator habitat – save the topiary for special occasions!



## Conclusion

Now that you've created a pollinator haven, you should feel great that you've helped these amazing and important creatures. You now have food and shelter throughout the year for butterflies, bees and other pollinators, and these pollinators, in turn, will multiply to help our habitats beyond your backyard. The next step (which we can consider bonus step #11) is to enjoy your garden – watch flowers bloom, count the number of bees you see visiting in the mornings. You have something to be proud of, and something that will bring you joy over the years.

If you've decided that helping pollinators is something you'd like to do more of, there are some other steps you can take. Share what you've learned with your neighbors, coworkers, family and friends and encourage them to protect pollinators, too. Certifying your garden celebrates your accomplishment and provides a model for others to follow. Organizations that certify pollinator habitat gardens include Audubon, the National Wildlife Federation and the Xerces Society.

You can also help scientists collect data about these understudied animals. Community science projects such as Bumblebee Watch, Monarch Larva Monitoring Project and the Great Sunflower Project gather information about pollinators from across the world, yet you can participate in your own patch of paradise.

- Pesticides are detrimental to many pollinators and are best avoided. Investigate other methods such as physical removal of pests, beneficial predators, or re-evaluate your care regimen.
- **Bumblebee Watch:** <https://www.bumblebeewatch.org/>
- **Monarch Larva Monitoring Project:** <https://monarchjointventure.org/mlmp>
- **Great Sunflower Project:** <https://www.greatsunflower.org/>

The encouraging aspect of pollinator gardening is that you can help pollinators with a few pots of flowers or by planting a prairie, by chatting with a friend or starting a neighborhood task force. All of us benefit from the work of pollinators, and all of us can do something to help them in return. Happy gardening!


## Pollinator Garden Layout Example #1

### Full Sun Garden Bed

30'x8' = 240 sq. ft.

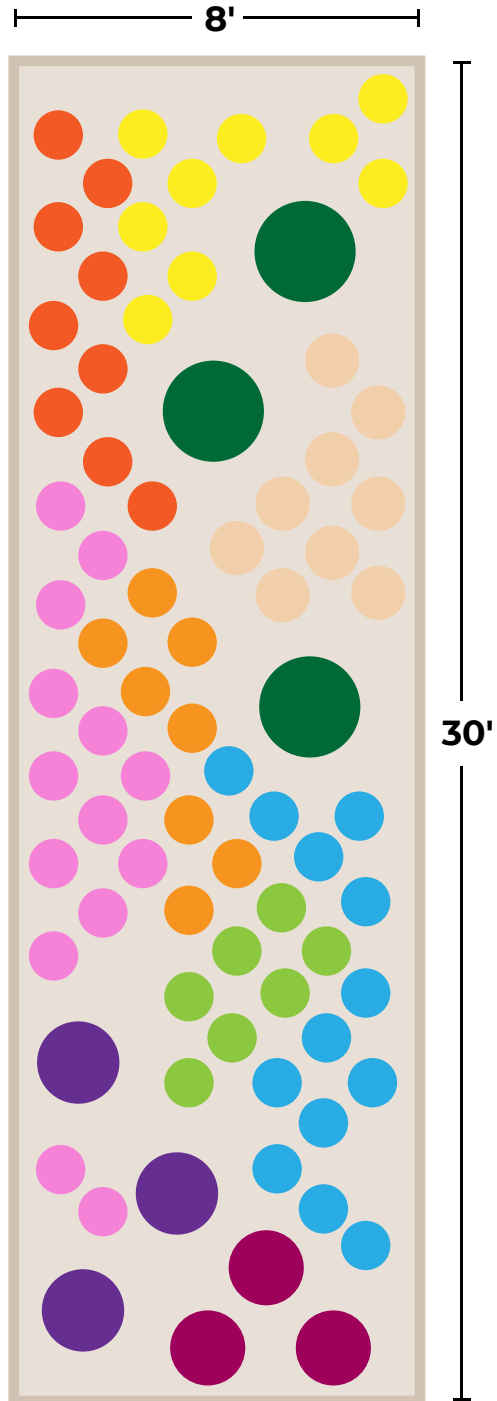
Perfect for bees,  
butterflies, hummingbirds,  
moths & beetles

#### Perennials

-  9 golden columbines  
(*Aquilegia chrysantha*)
-  9 blanket flowers  
(*Gaillardia aristata*)
-  13 winecups  
(*Callirhoe involucrata*)
-  9 butterfly weed  
(*Asclepias tuberosa*)
-  9 sunset hyssop  
(*Agastache rupestris*)
-  7 blue grama grass  
(*Bouteloua gracilis*)
-  13 large beardtongue  
(*Pentemon grandiflorus*)

#### Shrubs & Subshrubs

-  3 dwarf rabbit brush  
(*Ericameria nauseosa*  
*var. nauseosa*)
-  3 Colorado four o'clock  
(*Mirabilis multiflora*)
-  3 3-leaved sumac  
(*Rus Trilobata*)



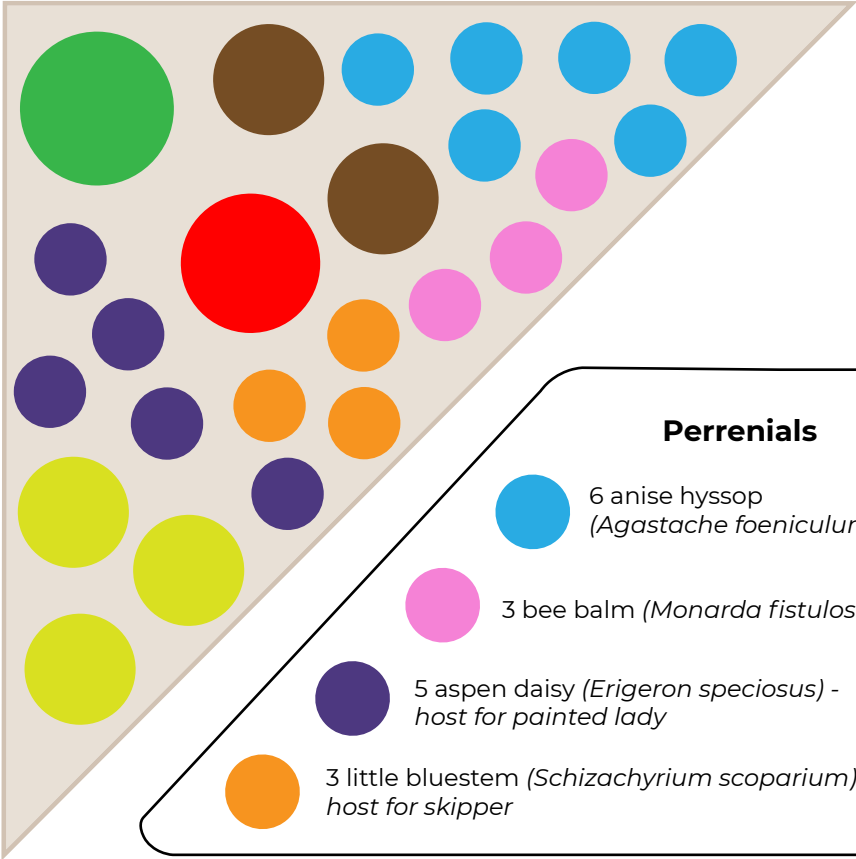


## Pollinator Garden Layout Example #2

### Part-Full Sun Corner Garden Bed

Perfect for bees, butterflies & pollinating flies

10'x10' triangle = 50 sq. ft.



### Shrubs



1 dwarf ninebark (*Physocarpus opulifolius 'Nana'*)



2 Oregon grape (*Mahonia aquifolium*) - great for leafcutter bees



1 redleaf rose (*Rosa glauca*) - great for leafcutter bees



3 sand cherry (*Prunus besseyi*) - host for swallowtails

# About the Author

**Amy Yarger, Horticulture Director**



Amy Yarger has worked in the public horticulture field since 1996. She received a bachelor's degree in ecology and evolutionary biology at the University of California, Irvine and then went on to study plant-animal interactions at the University of Michigan. Her master's thesis concerned the effects of invasive weeds on pollinator-plant relationships. Her work at the Butterfly Pavilion, where she has worked since 2000, touches on many of her passions: plants, insects, habitat conservation and science education.

She currently leads the Urban Prairies Project, which restores habitat in urban and suburban green spaces in Westminster and Broomfield. Amy has also installed pollinator habitat gardens throughout the community at locations such as Sprout City Farms, Clear Creek Valley Park and Good Samaritan Hospital. Her articles have been published in Colorado Gardener, Aquilegia and the journal for the Association for Zoological Horticulture. Through habitat gardening and education, Amy hopes to create a closer connection to nature and a greater understanding about the need for biodiversity locally and globally.

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