



Bees



About one-third of the human diet comes from insect-pollinated plants, and the honeybee is responsible for 80 percent of that pollination! Of course, it isn't just the honeybee that take on this important task: there are over 4000 species of bees in North America! Unfortunately bee populations have been declining over the past decades, due to many factors including habitat loss. So, do the bees a favour and create some habitat for them in your garden. In return they will be delighted to pollinate your plants!

Food

Bees need pollen and nectar, so make sure your garden includes flowers. Many herbs are a good source of nectar, including sage, thyme, and basil. Other flowering vegetable plants include squashes and pumpkins. Along with vegetables you may want to plant sunflowers or other flowers.



Shelter

Many bees are solitary, meaning that they nest alone. Build a special "bee hotel" for your garden out of a bundle of hollow sticks, or by filling an empty milk carton with paper tubes. Mount the bee hotel against a fence or wall (at least 60 cm off the ground) and be sure there is a roof over the top so that the bees will stay dry.

Water

Bees get thirsty too! Make sure they can get a drink of water without drowning by filling a shallow dish with some stones, then add water so that the top of each stone is slightly above the water level. Bees will be able to safely land on the stones and access the water easily.

Butterflies



Butterflies and moths have been around for hundreds of millions of years. Throughout history we have looked to butterfly populations to tell us how our ecosystems are doing. If your garden has several butterfly visitors, chances are you have created a very healthy environment for many other creatures too.

Food

Butterflies feed on flower nectar, so having flowers is key to attracting these fluttering creatures to your garden. Migrating butterflies need a good nectar source in the fall before heading south, so think about when your flowering plants will bloom and make sure they aren't all blooming in spring and summer. As a special treat, place some rotting fruit on a hanging plate and watch butterflies gather round. Fill the plate with a bit of water to keep ants out.



Shelter

Butterflies love basking in the sun! Like all insects, butterflies need the sun's energy to keep their bodies warm, if they get too cold, they can't fly! Well-placed rocks will warm up in the sun and provide great basking sites. Many butterflies don't migrate; instead, they seek out shelter to hibernate during the winter months, either as adults, or as caterpillars. Leaf litter provides a suitable shelter, as do piles of brush, twigs, and firewood.

Water

Butterflies also need water, but birdbaths and fountains are too deep. Instead, butterflies get their moisture from mud puddles, wet sandy spots, where they can safely stand and suck up the water and nutrients. Remember to keep any bird-friendly spots (birdbaths and houses) away from your butterfly resting areas as birds prey on butterflies.

Ladybugs



Did you know that there are nearly 200 ladybug species in North America! They prey on aphids and on many other soft-bodied insects and insect eggs. An adult ladybug can eat 300-400 aphids in one month!

Food

Ladybugs will happily feed on the insects that would otherwise do damage to our gardens, including, aphids, small caterpillars, and mites. By choosing not to spray your garden with pesticides, you'll be providing a tasty treat to ladybugs, and you can watch as the ecosystem works to balance pest problems. If you want to be extra sure that ladybugs notice your aphids, spray the affected plants with a light solution of sugar and water. The sugar water simulates aphid honeydew, and can increase visits by ladybugs.

Shelter

Like other beetles, ladybugs can be found in moist spots or under bark or other debris. You can add some patches of mulch, or use pieces of bark and leaves collected from around the garden in the fall to create a ladybug friendly environment. (Only use bark and leaves that have fallen naturally, do not remove directly from trees.)

Make sure you keep pesticides out of your garden to ensure that ladybug larva can hatch and that when they do, they have plenty of insects to munch on!





Earthworms



Most native earthworms are thought to have become extinct at the end of the last ice age, so many of the worms we see in our gardens are those introduced from Europe.

In the garden, earthworms make tunnels which help air and water reach plant roots. When an earthworm eats organic matter (leaves in the fall, leftover garden debris, even food scraps in the composter) they help break down the material more quickly, in turn making nutrients available for our plants.



Food

Worms will enjoy leaves left on the soil surface in the fall. A compost pile near your garden will also encourage a healthy worm population.

Shelter and Water

Earthworms need moist soil in order to breathe, so adding a layer of mulch can keep moisture levels consistent.

Heavy rains can cause moisture levels to rise so much that the oxygen in the soil is displaced. This causes earthworms to crawl to the surface, where they can be very sensitive to ultraviolet light (sunlight). By including a few plants with large leaves in each garden bed, you'll provide a shaded spot for the worms to wait out the storm.



Spiders



Sure, you may have a hard time convincing some people, but spiders are actually a gardener's best friend! Did you know that there are more than 3000 species of spiders in North America? Most of the spiders that will call your garden home won't be spinning webs, but are active hunters, chasing their prey down or pouncing out of hiding. Thanks to these skilled hunters, many garden pests can be kept at bay. In fact, spiders are among the most essential terrestrial predators, eating even more insects than birds and bats!



Shelter

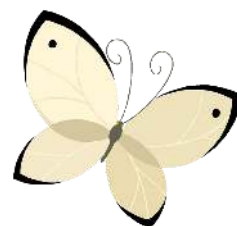
To keep spiders in your garden, the key is to provide good shelter. Exposure to wind, rain and sun can be deadly for a tiny spider, so minimize bare ground between your plants. If some space does exist, cover it with mulch, such as dry grass or dead leaves. Mulching in this way also helps retain moisture in the soil, a bonus for your newly planted seeds! In the fall, leave some plants standing in your garden; their stalks will provide an overwintering shelter for spiders.





Cabbage Worms

You may admire the white butterflies fluttering around the garden, but be warned that these cabbage moths lay hundreds of eggs on the bottom side of cabbage, kale and broccoli leaves. When the eggs hatch, the larvae (caterpillars) will feast on these plants. The velvety light green caterpillars are perfectly camouflaged against their meal of choice. They will chew holes into leaves and can even tunnel into heads of cabbage, leaving green droppings on your plants.



Natural predators

If you attract other insects that feed on cabbage worms, protecting your garden will be easy. The small flowers of mint and dill attract parasitic wasps that lay their eggs inside those of the cabbage worm. When they hatch, the tiny wasps gobble up the cabbage worm eggs for their first meal! Beetles, spiders, lacewings and birds are also natural predators of the cabbage worm.

You can also help by picking caterpillars off affected plants and dropping them into a bucket of soapy water.

Cutworms

Cutworms are the larvae of moths, or nocturnal butterflies. These grey grubby caterpillars especially like to devour freshly transplanted seedlings, even before they have a chance to stretch out their leaves!

Cutworms attack the stems of your small seedlings, and the damage will be obvious: baby plants chopped down right at the base of the stem. Cutworms are nocturnal creatures, so they can be difficult to spot during the day. However, if you go out in the morning and dig into the first few centimeters of soil around your damaged plants, you may be able to find some cutworms hiding.



Natural Predators

Cutworms have many enemies you can attract to your garden. Birds, moles and beetles relish these caterpillars, while bats hunt adult moths.

Protection

Protect your newly planted seedlings by making them cardboard collars (toilet paper rolls are great for this): Collars should be 15-20 cm tall and pushed into soil until about half of the collar is below soil level. Cutworms won't be able to climb over this barrier and won't have the patience to dig their way underneath.

Garden Planning Card



The slimiest of the garden pests, slugs and snails will chew through your plant leaves like nobody's business. You can tell if your garden has a slug problem if your plant leaves look like they have been munched around the edges, and a suspicious slimy trail is not far away! Get these pests out of the way while you can, each slug lays up to 500 eggs in a season!

Predators

Your first line of action should be to create a habitat for the slug's natural predators: ground beetles, snakes and toads all love to chow down on these slimy creatures. Consult with your fellow gardeners and find ways of attracting these predators to your garden.

Garden Planning Card

Shelter

Slugs and snails live and lay their eggs in warm, wet, dark places, so remove boards, bricks, and other damp debris from the ground.

Traps

- Slugs and snails hate travelling over rocky ground, so try encircling your newly planted seedlings with crushed eggshells to create a sharp barrier between slugs and your baby plants.
- Sprinkle the area around your seedlings with oat bran. Slugs love to eat it up but it makes their bellies very full so they won't be tempted by your plants.





Garden Planning Card

Aphids



Ah, aphids, the most common garden pest! These tiny creatures can wreak havoc on a garden by nibbling away at plants, but fortunately there are many natural ways of keeping them under control. Aphids will attack all parts of a plant including leaves, shoots, flowers, stems and even roots! Look for aphids gathered in large groups.

Predators

There are many insects that love feasting on aphids. Attracting these predators to your garden is an ecological way of keeping aphids under control: **Ladybugs** and **lacewings** have a particularly large appetite for aphids.



Garden Planning Card

Plants

Using a mix of plants that repel aphids and that attract (and therefore trap) them, is a creative strategy. Aphids tend to dislike **chives, onions and garlic** (the allium family) but they LOVE nasturtiums. **Nasturtiums**, hardy as they are, can provide a home for aphids and keep them off other more vulnerable vegetable plants.

Handpicking

Don't discount yourself as an aphid hunter! If you find stems or leaves covered in aphids, pick them and drop into a bucket of soapy water.



Flea Beetle

These little pests are very difficult to see The flea beetle is a tiny jumper, measuring only two millimeters! Beetles emerge from hibernation in May, ready to munch on the leaves of radish plants, kale and lettuce in your garden. You will know they've arrived when you notice many small round holes on plant leaves. Disturb flea beetles and they will leap like a flea.

Natural Predators

Ground beetles, birds, toads and parasitic wasps are natural predators of flea beetles. Attract ground beetles with a layer of mulch, and provide convenient places for solitary wasp nests near your garden. Consult with others to identify other strategies to attract these natural predators.



Or ...

Grind garlic or chili with water, then strain and spray on the foliage of your lettuce and radishes. This strong smelling mixture may help ward off flea beetles.

Mulch and water your lettuce and radishes regularly. Flea beetles prefer dry and hot weather and hide if the environment is too humid. For the same reason, make sure you plant your radishes and lettuce so that they have some shade and stay cool.



Garden Planning Card

Toads



Frogs, and their relatives, **toads**, are found on every continent except Antarctica and they have been around since before the dinosaurs! Unfortunately, because of their thin porous skin, they are extremely sensitive to changes in the environment and the presence of toxins. Critical declines in toad populations around the world are an important threat to global biodiversity. By creating an organic garden, you are creating a safe habitat for toads, and they will be wonderful garden helpers in return! In one summer they can gobble up 10,000 insects, most of which are considered to be garden pests. So keep your toads happy and you will help keep pests at bay organically.

Remember...Because toads are so sensitive to environmental toxins, keep pesticides and synthetic fertilizers out of your garden!



Garden Planning Card

Shelter

Create a cool safe shelter for toads by placing a terracotta clay pot upside down over soft dirt, in a quiet, shady place, and prop it up on one side so the toad can crawl inside. Piles of decomposing brush, dried leaves, logs and rocks can also provide toads with protection from sun and predators. Toads may use a pile of decomposing brush to hibernate in the winter.

Water

Toads, like frogs, are amphibians and need readily available sources of water. Place a saucer at ground level by digging it into the soil a little. Remember to add water when you are watering your plants!



Birds



Not all gardeners realize that **birds** play an important role in the garden ecosystem! They may peck at your veggies, but they are tremendous help in keeping insect populations under control. In spring and summer, insects form 90% of the diet of chickadees. Unfortunately, an estimated 7 million birds die each year because of exposure to lawn pesticides, so keep your garden pesticide-free if you want to encourage feathered friends to visit.

Food

There are many birds that feed on seeds. You can create a simple bird feeder out of an empty milk carton or you can attract these species by planting flowers that produce seeds themselves, such as cosmos or sunflowers. As your flowers die, leave the dried blooms (full of seeds!) out in the garden.



Shelter

Trees and bushes are important for birds to have perching and resting areas around your garden. Berry-bushes provide them with a fruity treat, while apple and pear trees give them nesting areas. Of course, a few handmade bird houses, or nesting boxes, won't hurt either.



Water

Birds need water for two reasons: drinking and bathing. Splashing around in a shallow pool can help birds remove dust, loose feathers, parasites and other debris from their feathers. For birds to feel comfortable using a bird bath, it should not be more than 5 to 10 cm deep.



Flowering Plants

Clever planning can result in a garden that is never without blossom and that never ceases to attract beneficial creatures such as: birds, pollinating insects (like butterflies, bees, and native wasps), reptiles, beetles and all sorts of helpful garden critters.



| Early Bloomers | Summer Bloomers | Fall Bloomers |
|-----------------|-----------------|---------------|
| Crabapple | Sunflowers | Cosmos |
| Plum and Cherry | Chives | Pumpkin |
| Raspberry | Sage | Squash |
| | Borage | |
| | Oregano | |
| | Mint | |
| | Cucumber | |
| | Tomato | |
| | Beans | |

Shade

Use tall or climbing sun loving plants to shade cool season crops.

Love shade:

Spinach & lettuce

Reach high:

Peas, pole beans, sunflowers,
tomatoes

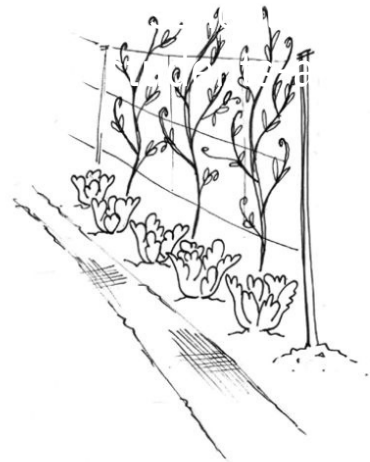


Image source: COG PWW 2011, The Organic Backyard: A guide to applying organic farming practices to your home or community garden

Sharing Nutrients

Grow garden plants with deep and shallow roots together. Plants all share the nutrients in the soil, but some reach down very deep, while others get most of their nutrients and moisture from the surface. By inter-mixing these plants, you minimize competition for moisture and nutrients.

Plants with deep roots



Shallow eaters:



Protection

Some plants are excellent companions because they protect others from pesky pests. Some plants may lure away harmful insects, while others may repel them. Here are some classic combos.



Beans and Potatoes

Beans help ward off Colorado Potato Beetles from your potato plants.



Protection



Radishes and Cucumbers

Radishes are great companions to cucumbers and squash as they help keep the striped cucumber beetle away!



Squash and Nasturtiums

Nasturtiums help protect squash plants from beetles, and aphids.

