## WANT TO GET MORE INVOLVED?

You can get more information on pollinators, ask questions, make connections with fellow pollinator lovers, find out upcoming event dates, and even start your own event to help out pollinators

Visit and “like” our Facebook page:
http://www.facebook.com/PartnershipsForPollinators

E-Democracy.org

Share and seek information about pollinator stewardship on E-Democracy:
http://forums.e-democracy.org/groups/eauclaire/messages/topic/1xEs2eGnIaLNNayfkaRkto

Or visit our Watershed Institute for Collaborative Environmental Studies (WICES) page:
http://www.uwec.edu/Watershed/projects/pollinators.htm

Don’t forget to visit our website:
http://pollinators.beavercreekreserve.org

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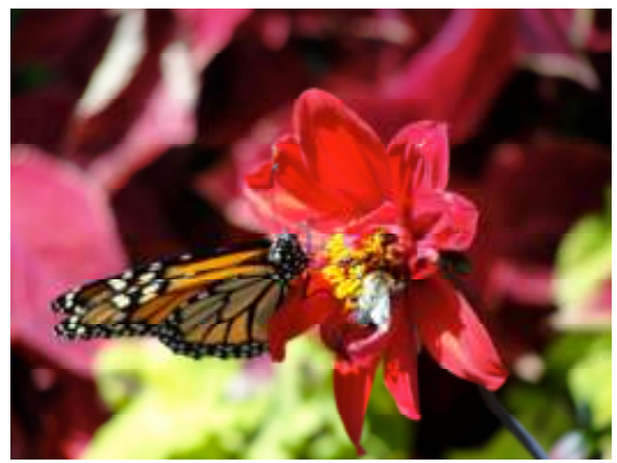
# A Comprehensive Guide to Pollinator Stewardship



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**Visit Our Website!**

**http://pollinators.beavercreekreserve.org**

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Photo by Ruth Cronje



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# WHERE CAN I GO FOR MORE INFORMATION?

For more general information on pollinators and planting pollinator habitat in the great lakes region, visit: http://www.xerces.org/pollinators-great-lakes-region/

For information on how to plant a garden using native plants specific for your yard type, visit: http://www.abnativeplants.com/index.cfm. This site includes a list of plant species.

For help with plant selection based on light availability, bloom time, or color, visit: http://bloomiq.com/plants.

For local help with gardening or plant selection, visit the Eau Claire Master Gardeners at: http://www.eauclairemastergardeners.com/ or call horticulture educator, Erin LaFaive at: 715-839-4712.

For instructions on how to build a bee block, visit: http://www.humanesociety.org/animals/resources/tips/bee_abode.html

For information on how to create a garden that is wildlife friendly, visit: http://www.nwf.org/Get-Outside/Outdoor-Activities/Garden-for-Wildlife.aspx. Make sure to certify your wildlife garden!

For more on identification of bees and other related insects, visit: http://insects.entomology.wisc.edu/hymenoptera/index.html. This site provides multiple photos for each species.

For more information on pollination, visit: http://www.mbgnet.net/bioplants/pollination.html

For a pollinator guide for our area, visit: http://pollinator.org/PDFs/Guides/EBFContinentalrx13FINAL.pdf

For more information on the importance of native pollinators, visit: http://www.nwf.org/News-and-Magazines/National-Wildlife/Gardening/Archives/2009/The-Buzz-on-Native-Pollinators.aspx

For more information on why you should plant an urban bee garden, visit: http://nature.berkeley.edu/urbanbeegardens/



# WHY ARE POLLINATORS IMPORTANT?

Pollinators (bees, butterflies, some other insects, and hummingbirds) are important to our food supply and our ecosystem. They are necessary to produce 1/3 of our crop foods and native pollinators alone represent a $3 billion value to US agriculture. Domestic honeybees represent another $10 billion.

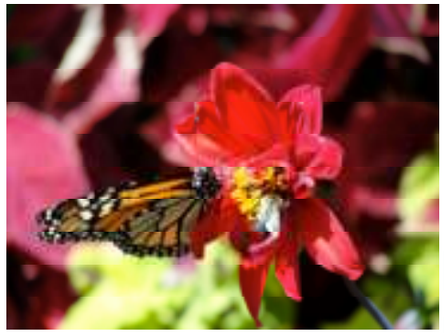
Unfortunately, pollinators are in crisis. Both native (wild) and honeybees have been mysteriously dying and disappearing. This phenomenon has been named Colony Collapse Disorder (CCD) and has been associated with disease, pesticide use, poor nutrition, and loss of habitat.

It is crucial that we take steps to help pollinators, and in helping them we are helping our own communities. There are many ways you can help make a difference for pollinators. Even the smallest of actions can make a big difference in the lives of pollinators.

Photos by Ruth Cronje

# WHAT DO POLLINATORS NEED?

Pollinators have needs that are not unlike our own basic needs. They need something to eat, a source of water to drink, and a safe egg-laying or nesting site. Though ideal, it is not necessary for a site to provide for all of these needs, because bees and other insects are able to utilize partial habitats. A partial habitat is considered an area with either the pollen or nectar required for food, or nesting sites, but not both.



Bees feed on nectar and pollen, both of which are provided by flowers. Because of this, it is critical that bees are able to find a diverse range of flowers that bloom throughout the entire growing season. During the summer, not only are bees eating the pollen and nectar, but they are also building up reserves of honey which will feed them and their young during the winter. For more on providing food for pollinators, see our plant list on pages 8 through 10.

Pollinators also need a source of drinking water. There are many ways to go about providing water, some of which include setting up a birdbath, pond, water garden, mister or fountain. Alternatively, you can dig a small mud puddle, or allow natural puddling areas of your yard to remain intact. This also provides mud which is beneficial to pollinators.

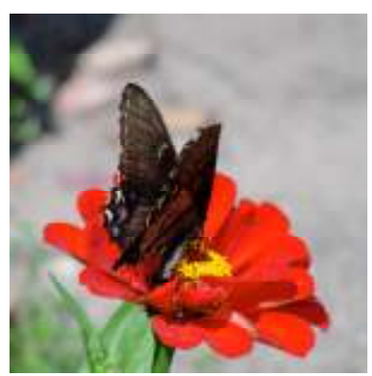
Lastly, pollinators need a place to live. The majority of North America's 4,000 species of native bees are solitary and do not live in hives. Roughly 70 percent live in the ground. Ground nesters need direct access to the soil surface. Ground-nesting bees prefer to live in sandy or loamy soils with little to no vegetation over rich soils. You can easily construct a designated area of semi-bare ground or a pile of soil stabilized with grasses and wildflowers to help ground-nesting bees.



# WHO ARE OUR PARTNERS?

- Beaver Creek Reserve
- Eau Claire Area Master Gardeners
- Eau Claire Area School District
- Eau Claire Garden Club
- Girl Scouts of the Northwestern Great Lakes
- The Potting Shed
- You?

Photos by Ruth Cronje



- Pesticides should only be applied when pollinators are least active. Pollinators are least active during late afternoon and at night.
- Pesticides should never be applied when there is a strong wind, in order to minimize spray drift.
- Limit the number of chemicals and aim to treat only the specific problem you have.
- Because different chemicals have different effects on different species, citizens should find out what species of pollinators are prominent in their area before applying chemical treatments to their plants. It may be possible to pick a pesticide less harmful to pollinators common to a certain area.

Photo by Greg Nelson

If you don't want to use pesticides, but still want to get rid of pests, there is a way! Integrated Pest Management (IPM) is a natural way of keeping your garden pest free. This method involves 4 major components: setting action thresholds, monitoring and identifying pests, prevention steps, and control steps. For more information call the Eau Claire County UW-Extension office at 715-839-4712 or refer to page 14.



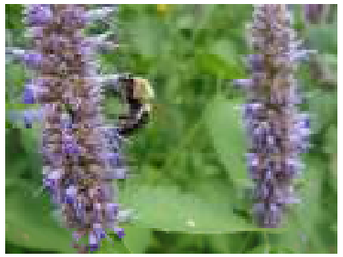
The remaining 30 percent of native bees are wood nesters and live in the abandoned beetle tunnels of logs, stumps, or snags. Some wood nesters will chew out the centers of soft twigs or stems for their nests. To provide habitat for wood nesters, dead branches, dead logs and wood piles, stumps, or snags should be preserved wherever possible. Shrubs with soft or hollow stems, such as elderberry, raspberry, blackberry, or box elder, should also be retained. It is also possible to construct artificial nests for wood-nesting bees by drilling a series of holes into a wooden block. For more information on building a bee block, refer to page 14.

**When providing habitat for bees, less is often more. It can often be as easy as retaining the naturally occurring "wild" sites in your yard.**

Even if you cannot provide a garden to pollinators, it can still be just as beneficial to provide shelter. Most bees fly a couple hundred yards or less between nesting and foraging. For this reason, bees are particularly susceptible to habitat fragmentation. Habitat fragmentation is the division of habitat into smaller separated parts. The loss of nesting sites and flower-rich forage areas are the greatest threats to pollinators.

Above: Habitat for ground nesting bees. Photo by Ruth Cronje. Left: Habitat for wood nesting bees. Photo by Lizz Beilke. Picture on page 4 by Ruth Cronje.

# HOW DO I PLANT POLLINATOR HABITAT?



Hyssop
Photo by Ruth Cronje

## Step 1: Choosing the location and size

Choosing an area of land takes careful consideration. It is best to plant a pollinator garden in as much sun as possible. This will not only help the plants produce more nectar for the pollinators, but the pollinators themselves need the sun's warmth to maintain a healthy body temperature.

Size is another important consideration. The larger the garden the more plants you can put in, which will increase the garden's diversity; however, a larger garden requires more upkeep. Before planting, think about how much time you can invest in your garden.

Don't worry—It is actually good to leave some of the weeds to give the pollinators shelter!

## Step 2: Picking out plants

Once you know the size and location of the garden you can determine what plants you would like to use. Refer to the plant list on pages 8 through 10. You should choose plants from each of the bloom time categories to ensure that the pollinators will have food throughout the year. It is also best to use a diverse group of plants, including native and non-native species. In addition, planting a variety of plants helps to maintain a healthy garden.



# WHAT ABOUT PESTICIDES?

Pesticides not only harm pests, but also have negative impacts on pollinators. These impacts range from death to sub-lethal effects. A sub-lethal effect doesn't necessarily kill the bee, but may cause many other negative side effects. Pesticides can cause bees to forget how to get back to their hive, or may prevent them from obtaining food. A bee exposed to pesticides may bring the pesticide back to their nest, which harms the babies and other members of the colony.

The two main types of pesticides are synthetic pesticides, which are chemically made by humans, and organic pesticides, which are made by organic sources such as plants and bacteria. Many people assume organic-approved pesticides are safer for pollinator species because they do not contain synthetic ingredients. However, organic pesticides are used to get rid of pests, and do just that. Therefore, they are not any safer than nonorganic pesticides.

**Since pesticides harm pollinators, we encourage you not to use them at all.** However, if you choose to use pesticides in your garden, be sure to follow these simple guidelines:

- Follow the directions. If you are not sure how to apply a certain pesticide, check the EPA website or simply call the Eau Claire County UW-Extension office at 715-839-4712.
- Use a narrow-spectrum pesticide that targets one specific pest so that you aren't harming organisms that you didn't mean to.
- Never use pesticides as a cautionary or preventative measure, only if an outbreak has already occurred.
- Do not use systemic pesticides, also called "neonicotinoids" or "neonics." Recent research has linked these types of pesticides to bee disappearance and Colony Collapse Disorder.
- Never use pesticides during your plants' blooming period. This is the time that the largest quantity of pollinators will be visiting your plants

| Native Plants | | | |
|---|---|---|---|
| Bloom Time: | Spring | Summer | Fall |
| **Perennial** | | | |
| Anise Hyssop (edible) | | x | |
| Aster | | | x |
| Beardtongue | | x | |
| Bee Balm (aka monarda and bergamot) | | x | |
| Blazing Star (Liatris) | | x | x |
| Bloodroot | x | | |
| Cup Plant | | x | x |
| Daisy Fleabanes | | x | |
| Fireweed | | x | x |
| Gentians | | | x |
| Goldenrod | | x | x |
| Joe Pye Weed | | | x |
| Lupine | x | x | |
| Milkweed | | x | |
| Purple Coneflower | | x | x |
| Rattlesnake Master | x | x | |
| Red Columbine | x | x | |
| Steeplebush | | x | |
| Trillium | | x | |
| Trout Lily | x | | |
| Wild Indigo | | x | |
| **Annual** | | | |
| Lobelia | | | x |
| Sunflower (some varieties reseed) | x | x | x |



## Step 3: Preparing the soil

Once you have decided on a location, size, and flowers you can prepare the soil. The plants that are in that area will need to be removed and the soil will need to be loosened by tilling. Integrate compost if you can to improve soil quality.

## Step 4: Plant!

Once the soil is ready it is finally time to plant! Some plants have special instructions on how far apart to plant them and how deep to dig the hole. Take into consideration how big the plant will become when determining locations for the plants. If you have questions, call the Eau Claire County UW-Extension office at 715-839-4712 .

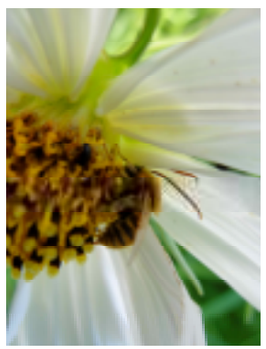
## Step 5: Maintaining

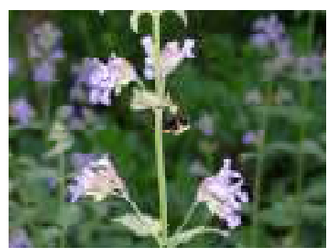
Even after the garden is planted you can make it pollinator friendly. You can refer back to pages 4 and 5 to include pollinator habitat in your garden. To help protect pollinators as they overwinter in their nests, it is important that your garden soil not be disturbed until spring. The site should be protected from digging, tilling, or compaction.

Purple Coneflower
Photo by Ruth Cronje

# WHAT PLANTS SHOULD I USE?

When choosing plants, it is best to offer a mixture of native and non-native plants. It is even more crucial to include a variety of flowers with differing bloom times to provide pollinators with a source of food throughout the growing season. This basic plant list is suited for the Eau Claire, WI area (Zone 4.)





Cosmos (Left) and Catmint (Right)
Photos by Ruth Cronje

| Non-native Plants | | | |
|---|---|---|---|
| Bloom Time: | Spring | Summer | Fall |
| **Annual** | | | |
| Basil (edible) | x | x | x |
| Borage (Star Flower) (edible) | x | x | x |
| Cosmos | | x | x |
| Lavender (Munstead is semi-reliably hardy in Zone 4; all other varieties will be annuals in our zone) | x | x | x |
| Rosemary (edible: can sometimes be over-wintered in a pot inside) | x | x | |



| Non-native Plants | | | |
|---|---|---|---|
| Bloom Time: | Spring | Summer | Fall |
| **Perennial** | | | |
| Squill (a bulb that spreads) | x | | |
| Catmint (perennial in Zone 4) | | x | |
| Oregano (edible) | | x | x |
| Russian Sage (NOT edible) | | x | x |
| Spearmint (edible; Spreads!) | | x | |

Photos by Ruth Cronje

| Perennial Woody Shrubs | | | |
|---|---|---|---|
| Bloom Time: | Spring | Summer | Fall |
| Black Chokeberry | x | | |
| Eastern Redbud | x | | |
| Elderberry | x | | |
| Pin Cherry | x | | |
| Service Berry | x | | |