Recognizing and Protecting Pollinators in the Agricultural Landscape

PJ Liesch and Bryan Jensen

UW-Extension and

UW-Madison Entomology Department

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

UW Extension
University of Wisconsin-Extension

Department of Entomology
University of Wisconsin

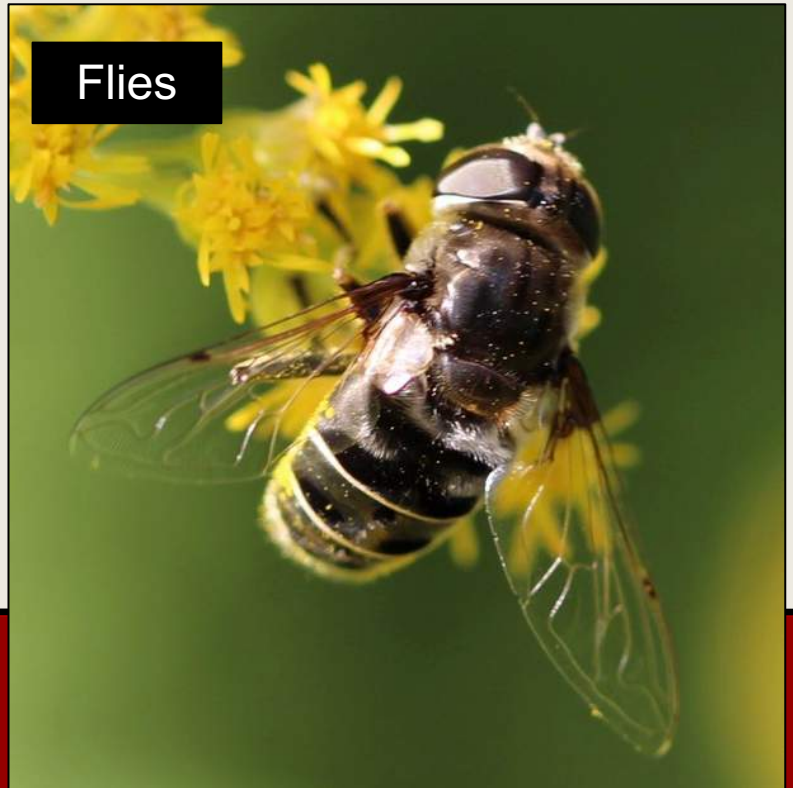
Pollinators

- Pollinator: an organism that moves pollen between flowers

“Wild” Bees

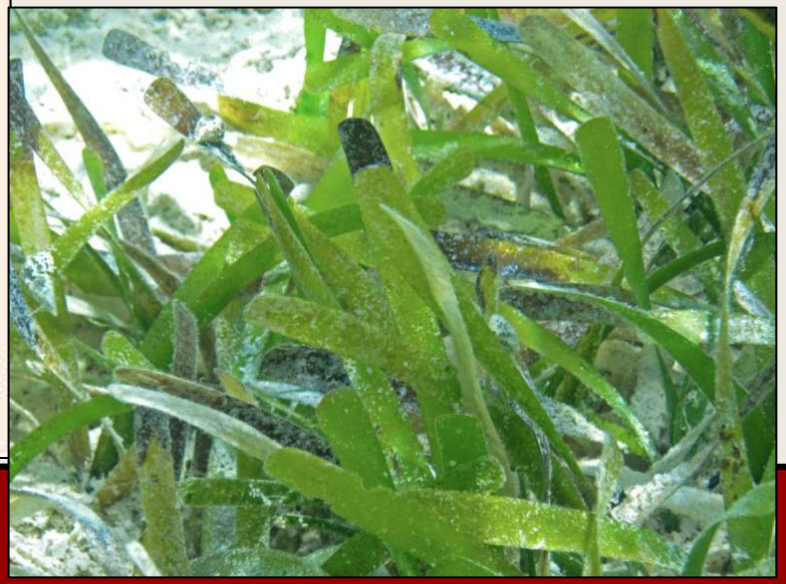
All Photos on this slide by Christy Stewart

Other Insect Pollinators



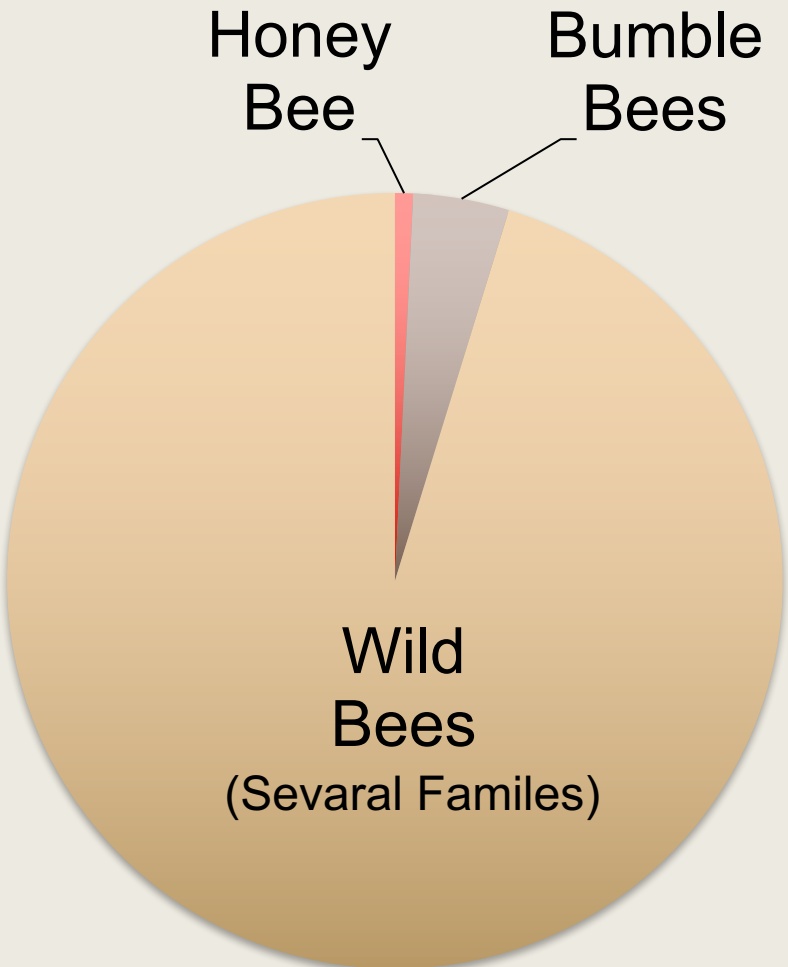
Other Pollinators

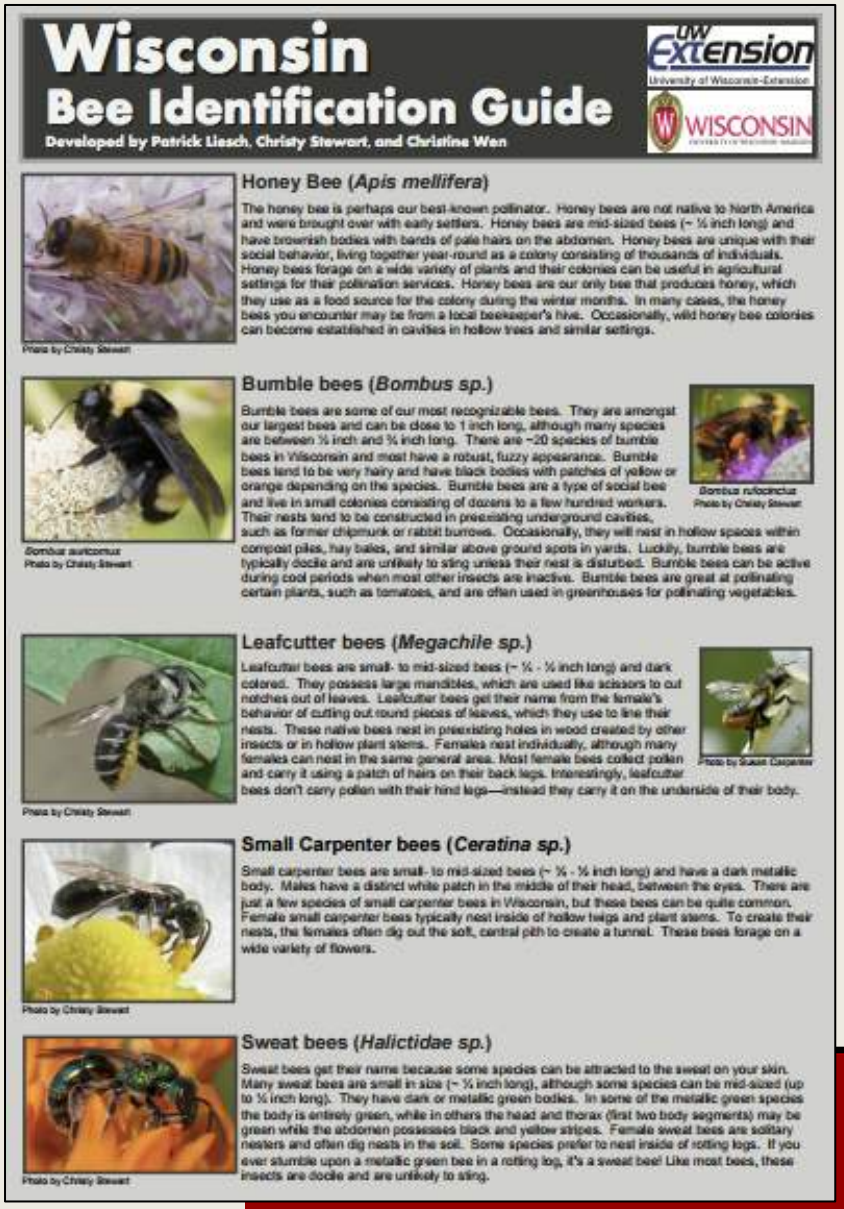
Lesser long-nosed bat pollinating a saguaro cactus in the desert Southwest. Photo: Merlin D. Tuttle, Bat Conservation International



Meet the Bees:

- **United States**: ~4,000 species
  - **Wisconsin**: ~400 species





Wisconsin
Bee Identification Guide

Developed by Patrick Liesch, Christy Stewart, and Christine Wen

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WISCONSIN

Honey Bee (*Apis mellifera*)

The honey bee is perhaps our best-known pollinator. Honey bees are not native to North America and were brought over with early settlers. Honey bees are mid-sized bees (~ ½ inch long) and have brownish bodies with bands of pale hairs on the abdomen. Honey bees are unique with their social behavior, living together year-round as a colony consisting of thousands of individuals. Honey bees forage on a wide variety of plants and their colonies can be useful in agricultural settings for their pollination services. Honey bees are our only bee that produces honey, which they use as a food source for the colony during the winter months. In many cases, the honey bees you encounter may be from a local beekeeper's hive. Occasionally, wild honey bee colonies can become established in cavities in hollow trees and similar settings.

Photo by Christy Stewart

Bumble bees (*Bombus sp.*)

Bumble bees are some of our most recognizable bees. They are amongst our largest bees and can be close to 1 inch long, although many species are between ½ inch and ¾ inch long. There are ~20 species of bumble bees in Wisconsin and most have a robust, fuzzy appearance. Bumble bees tend to be very hairy and have black bodies with patches of yellow or orange depending on the species. Bumble bees are a type of social bee and live in small colonies consisting of dozens to a few hundred workers. Their nests tend to be constructed in preexisting underground cavities, such as former chipmunk or rabbit burrows. Occasionally, they will nest in hollow spaces within compost piles, hay bales, and similar above ground spots in yards. Luckily, bumble bees are typically docile and are unlikely to sting unless their nest is disturbed. Bumble bees can be active during cool periods when most other insects are inactive. Bumble bees are great at pollinating certain plants, such as tomatoes, and are often used in greenhouses for pollinating vegetables.

Bombus auricomus
Photo by Christy Stewart

Bombus rufocinctus
Photo by Christy Stewart

Leafcutter bees (*Megachile sp.*)

Leafcutter bees are small- to mid-sized bees (~ ¼ - ½ inch long) and dark colored. They possess large mandibles, which are used like scissors to cut notches out of leaves. Leafcutter bees get their name from the female's behavior of cutting out round pieces of leaves, which they use to line their nests. These native bees nest in preexisting holes in wood created by other insects or in hollow plant stems. Females nest individually, although many females can nest in the same general area. Most female bees collect pollen and carry it using a patch of hairs on their back legs. Interestingly, leafcutter bees don't carry pollen with their hind legs—instead they carry it on the underside of their body.

Photo by Christy Stewart

Photo by Susan Carpenter

Small Carpenter bees (*Ceratina sp.*)

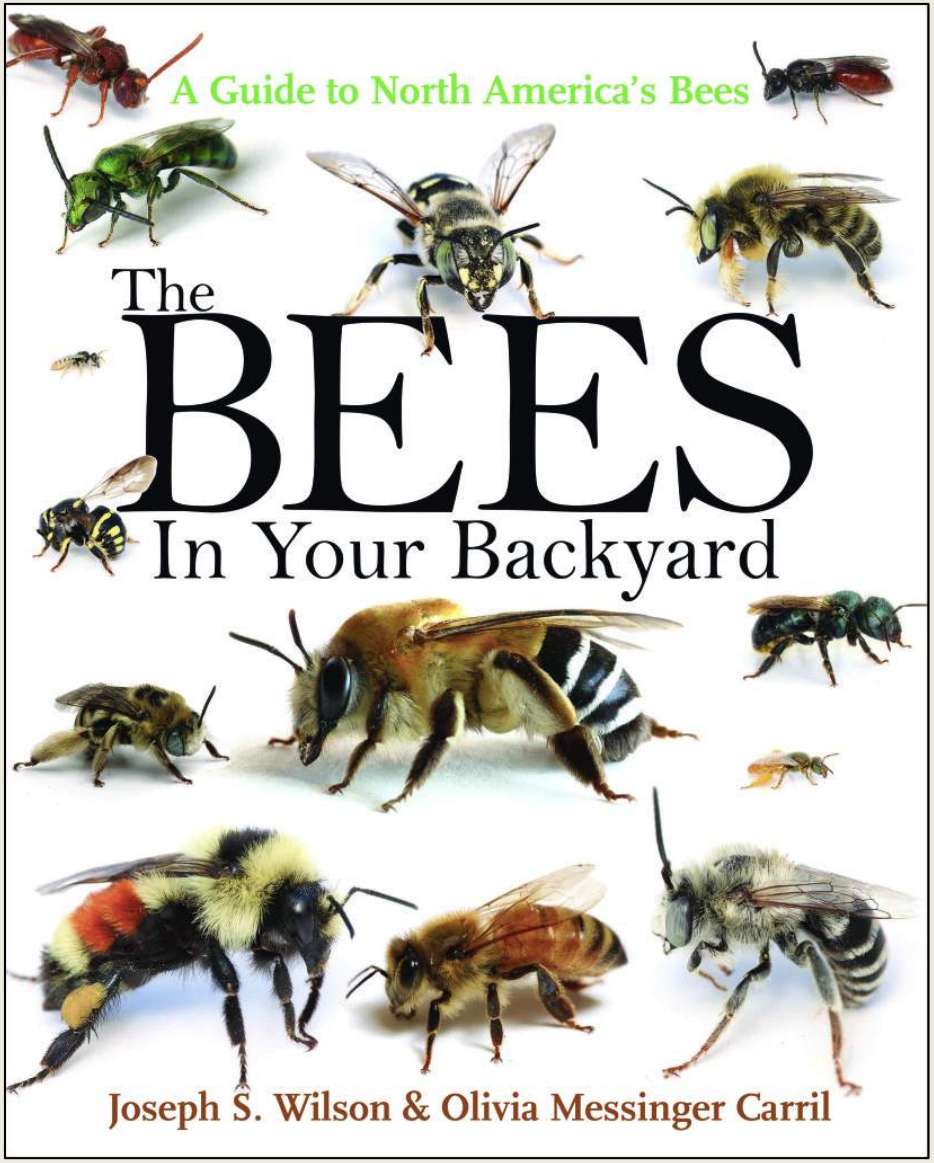
Small carpenter bees are small- to mid-sized bees (~ ¼ - ½ inch long) and have a dark metallic body. Males have a distinct white patch in the middle of their head, between the eyes. There are just a few species of small carpenter bees in Wisconsin, but these bees can be quite common. Female small carpenter bees typically nest inside of hollow twigs and plant stems. To create their nests, the females often dig out the soft, central pith to create a tunnel. These bees forage on a wide variety of flowers.

Photo by Christy Stewart

Sweat bees (*Halictidae sp.*)

Sweat bees get their name because some species can be attracted to the sweat on your skin. Many sweat bees are small in size (~ ¼ inch long), although some species can be mid-sized (up to ½ inch long). They have dark or metallic green bodies. In some of the metallic green species the body is entirely green, while in others the head and thorax (first two body segments) may be green while the abdomen possesses black and yellow stripes. Female sweat bees are solitary nesters and often dig nests in the soil. Some species prefer to nest inside of rotting logs. If you ever stumble upon a metallic green bee in a rotting log, it's a sweat bee! Like most bees, these insects are docile and are unlikely to sting.

Photo by Christy Stewart



UWEX Pollinator Factsheet: G4001

(G4001)

Supporting native bees:

Our essential pollinators

Sweat bee (*Halictus sp.*) on rattlesnake master

Fruit and vegetable pollination

Approximately 75% of the world's major food crops require or benefit from animal pollination. This includes many of the fruits and vegetables grown in Wisconsin gardens, such as strawberries, blueberries, raspberries, currants, plums, apples, sweet cherries, pears, watermelon, cantaloupe, cucumbers, squash, and tomatoes. For other crops such as carrots, onions, broccoli, cauliflower, cabbage, and many herbs, pollinators are beneficial solely for seed production.

Pollinators

Pollinators in Wisconsin are comprised mostly of insects such as bees, flies, wasps, butterflies, moths, beetles, and ants, as well as hummingbirds. Bees are the most important pollinators for many plant species and feed almost exclusively on pollen and nectar. The non-native honeybee (*Apis mellifera*) is the most commonly used managed bee for pollination of large acreage crop plants, primarily because it is easily reared and transported and lives in perennial colonies that can attain a size of 50,000 or more at their peak. The blue orchard bee, also referred to as the mason orchard bee (*Osmia lignaria*), is a native managed pollinator for orchards. Just 250 of these bees, as opposed to 20,000 honeybees, will pollinate an acre of apple trees.

Rusty-patched bumblebee (*Bombus affinis*) with pollen collected from purple prairie clover

Small carpenter bee (*Ceratina sp.*) nectaring on alpine strawberry blossom

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abitat for pollinators, as
nd other wildlife. Consider
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ering, native plants that are
od sources of food for bees.
rsity of plants that will bloom
ing, to feed early emerging
e fall when some bees such
e queens are preparing to
ave at least 2–3 plant species
ny given time.

					Soil moisture
					Average to wet
					Average to wet
					Average
					Average to dry
					Average
					Average to dry
					Average to dry
					Average to dry
Swamp rose	*Rosa palustris*	Summer	6′	Sun	Wet
White meadowsweet	*Spiraea alba*	Summer	3–5′	Sun	Average to wet
American basswood	*Tilia americana*	Summer	75–130′	Sun to shade	Average
Steeplebush	*Spiraea tomentosa*	Summer to fall	2–4′	Sun to part shade	Average to wet

2

Bee Biology:
What Do Bees Need to Survive?

1. **Food**
   - Nectar
   - Pollen

2. **Shelter**
   - Ground nesters (most bees)
   - Hole nesters (~1/3 of bees)
   - Cavity nesters (bumble bees, feral honey bees)

What's Up With Pollinators?

- Many pollinators face declines due to a variety of factors
  - Habitat loss & fragmentation
  - Diseases: fungi, viruses, etc.
  - Parasites: mites
  - Agricultural practices
  - Pesticides
  - Many other factors

Pollinators: Status

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Apis mellifera

View More Photos of

View All Friends

Send a Message

Poke

Friend Details edit

You are friends with

Friends

54 friends See All

Information

Account Info

Name: *Apis mellifera*

Hive: 23-A

Basic Info

Relationship Status: It's complicated

Looking For: Pollen and Nectar

Pupation: 13 days ago

Contact Info

Email:

Personal Info

Political Views: Long live the Queen!

Favorite Hobby: Waggle dancing

Favorite Movie: A Bug's Life

How Can YOU Help Pollinators?

1. Make your yard and landscape pollinator friendly
   - Diversity of flowers = diversity of insects
   - Seasonal blooming patterns

2. Provide nesting habitat

1. Minimize risks to pollinators when using pesticides

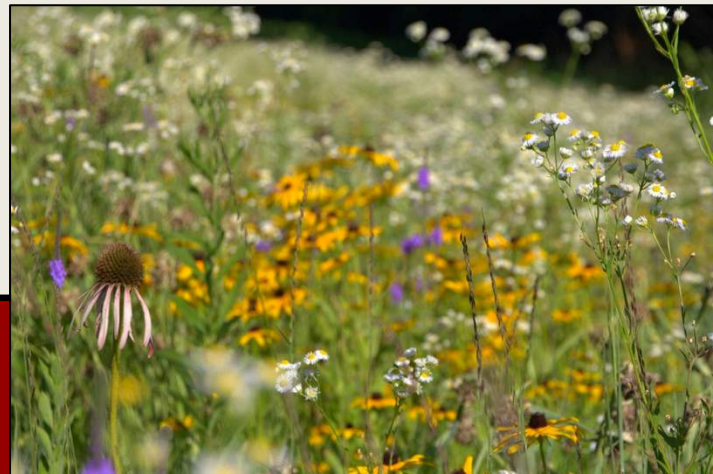
1. Consult the Wisconsin Pollinator Protection Plan

Making the Landscape Pollinator Friendly

- Diversity of flowers = diversity of insects
  - Ideal situation: 3+ different flowers blooming at any time

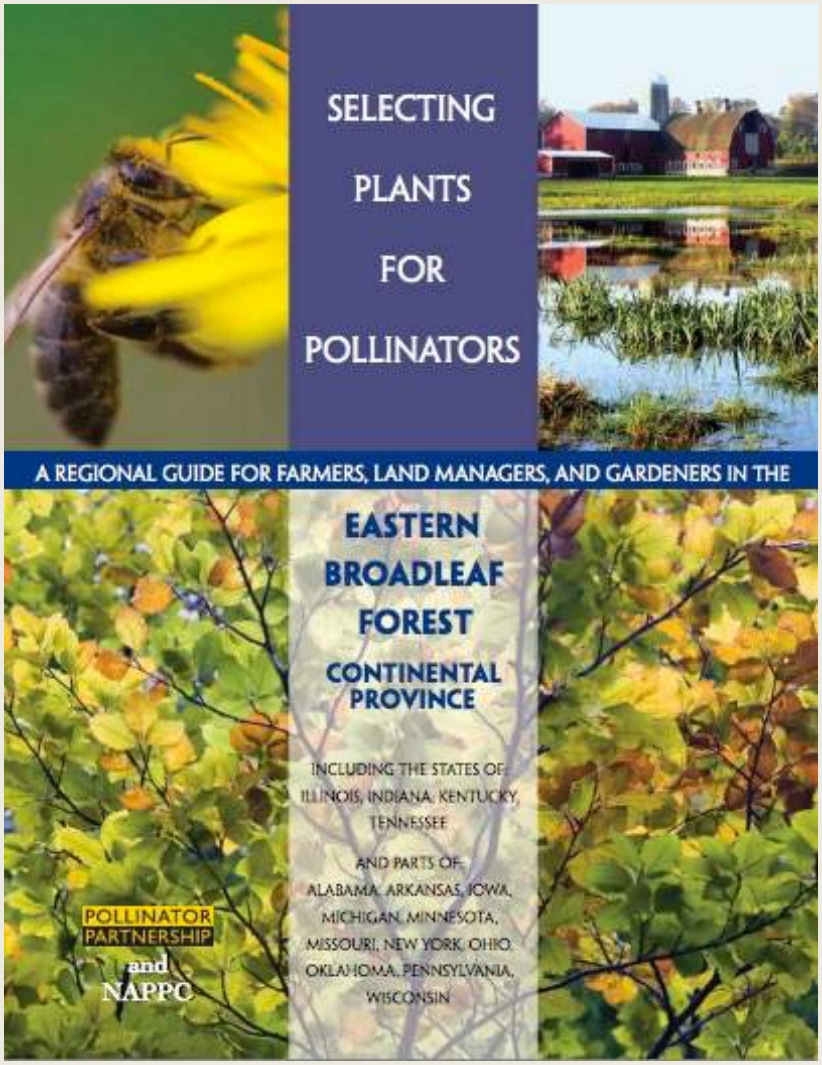
- Go native!
  - Native bees are adapted for native flowers
  - Some commercial flower cultivars (“double flowers”) have little to no nectar or pollen and don’t offer resource for bees

- Tolerate some weeds (i.e., in lawns)
  - Clover, dandelions, etc. can provide nectar/pollen for insects



Pollinator.org

Guide: plants to attract bees and other pollinators



PLANTS THAT ATTRACT POLLINATORS IN THE EASTERN BROADLEAF FOREST, CONTINENTAL PROVINCE

The following chart lists plants that attract pollinators. It is not exhaustive, but provides guidance on where to start. Annuals, herbs, weeds, and cover crops provide food and shelter for pollinators, too.

Botanical Name	Common Name	Color	Height	Flower Season	Sun	Soil	Visitation by Pollinators	Iso a host plant. See pgs 20-21
Trees & Shrubs								
Acer spp.	Maples	red, greenish yellow	40-70′	Mar-Apr	sun to partial shade	dry to wet	bees	X
Amelanchier spp.	service berry	white	6-40′	Mar-Apr	sun to partial shade	moist, well drained	bees, flies	X
Aronia melanocarpa	black chokeberry	white	6-7′	May-June	sun to partial sun	dry to moist	bees, beetles, flies	X
Catalpa speciosa	northern catalpa	white	60-80′	May-July	sun to partial shade	moist, well drained	bees, moths	X
Cercis canadensis	eastern redbud	pink to lavender	10-30′	Apr-May	sun to partial shade	moist, well drained	bees	X
Cornus alternifolia	dogwood	white	6-18′	Apr-July	sun to shade	dry to wet	bees, beetles, flies, butterflies	X
Lindera benzoin	spicebush	yellow green	4-6′	Mar-May	sun to shade	moist	butterflies	X
Physocarpus opulifolius	eastern ninebark	white	6-8″	May-June	sun to partial shade	dry to wet	bees, butterflies	X
Prunus pensylvanica	pin cherry	white	25-40′	May-June	sun	dry to moist, well drained	bees	X
Rhus aromatica	aromatic sumac	yellow green	4-6′	Apr-May	sun to partial shade	dry to moist, well drained	butterflies, bees	X
Salix nigra	black willow	yellow green	12-50′	Apr-June	sun to shade	moist to wet	bees,	X
Sambucus racemosa	red elderberry	white	5-7′	May-June	sun to partial shade	dry to wet	bees, beetles, flies	X
Sassafras albidum	sassafras	yellow green	35-60′	Mar-June	sun to partial shade	dry to wet	flies	X
Tilia americana	basswood	yellow white	80′+	Apr-June	sun to partial shade	moist, well drained	bees, flies, moths	X
Vaccinium macrocarpon	cranberry	white to pink	1-4″	Apr-June	sun to partial shade	dry to moist, well drained	bees	X
Viburnum prunifolium	black haw	white	5-12′	Apr-June	sun to shade	dry to moist, well drained	flies, beetles	X
Perennial Flowers								
Actaea racemosa	black cohosh	white	36-60″	June-July	shade to partial sun	moist	bees, flies	X
Aquilegia canadensis	red columbine	red with yellow	12-36″	Apr-July	partial shade to sun	moist, well drained	hummingbirds, bees	X
Asclepias hirtella	green milkweed	green	12-48″	June-Aug	sun to partial shade	dry to wet	bees, beetles, flies, butterflies	X
Coreopsis spp.	tickseeds	yellow	12-30″	May-Aug	sun to partial sun	moist to dry	bees, butterflies	
Erigeron spp.	daisy fleabanes	white, yellow	18-30′	May-Sept	partial sun to sun	moist to wet	bees, butterflies, moths	X
Erythronium americanum	yellow trout lily	yellow	3-6″	Apr-June	shade	moist	bees	

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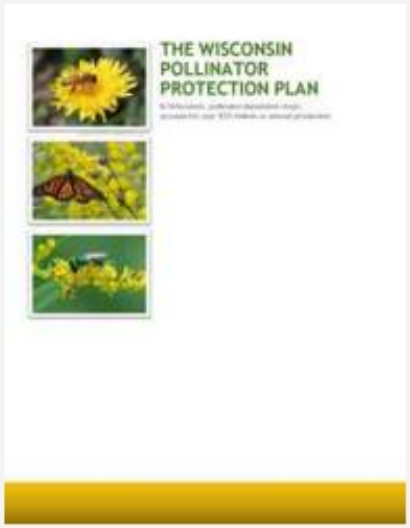
Making the Landscape Pollinator Friendly

- Provide nesting habitat: many bees nest in hollow “tubes”


Bee
Hotel
& Flower Seeds
for Bees
plant theatre
FLOWER SEEDS INCLUDED!

Wisconsin Pollinator Protection Plan

Pollinator Protection in Wisconsin



The comment period has closed for the Wisconsin Pollinator Protection Plan. We are in the process of reviwing comments and will issue the final plan in early spring. Below, you can view or download the complete draft document, which includes economic and scientific background, or the portions with recommended best management practices.

- Complete Pollinator Protection Plan
- Best Management Practices for Gardens and Lawns
- Best Management Practices for Beekeeping
- Best Management Practices for Farms
- Best Management Practices for Prairies, Roadsides and Open Spaces

On this page: