



Helpful Insects & Pollinators



What We Will Talk About

- Habitat for pollinators
- Pollination
- Meet the Pollinators and Beneficial Insects
- Plants that Support Pollinators
- Get Involved

Habitat



Loss of Habitat for Pollinators



- Over 2 million habitat acres are lost annually to development and agriculture.
- Extensive use of herbicides that eliminate host and food plants
- Insecticide use
- Disease and invasive species predation

Natives are Best

- “Our native insects will not be able to survive on alien plant species.” – Douglas Tallamy, *Bringing Nature Home*
- It takes evolutionary time for insects to recognize food
- Most insects are specialists



Gardens for Pollinators

- Choose a sunny location.
- Add host & nectar plants, focus on natives
- Provide nesting areas
- Avoid using herbicides & insecticides
- Take the WI Pollinator Habitat Assessment online at: pollinators.wisc.edu/habitat/



Echinacea purpurea

Why Pollinators & Helpful Insects are Important

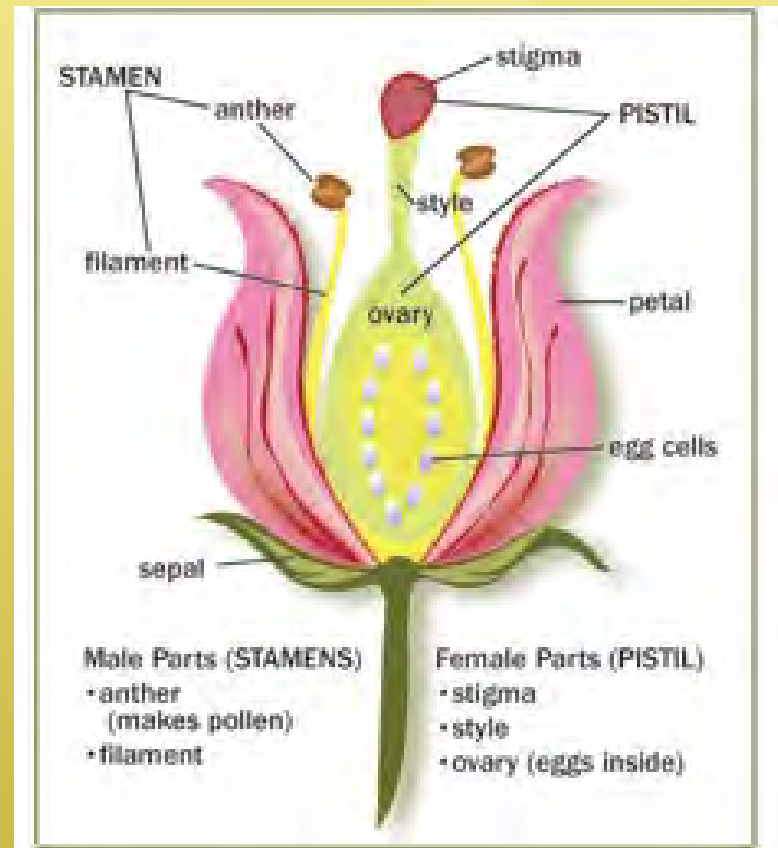


- 99% of insects are harmless or even beneficial!
- Over 200,000 species of animals pollinate almost 90% of all flowering plants
- About 75% of the world's major food crops require pollination
- ½ of the world's oils, fibers and raw materials require pollination
- Assist in breaking down organic materials.
- Feed upon other insects.
- Provide food for birds and fish.

Butterfly Weed (Asclepias tuberosa)

Pollination Steps

- Pollinator seeks food (nectar)
- Anther produces pollen.
- Pollen from the anther sticks to the body of the pollinator or is moved by wind or water
- Pollen on the pollinator or by wind transfers to the flower stigma of another flower



Graphic: Pollinator.org



Pollination



Meet the Pollinators

Bees, Butterflies, Moths, Wasps,
Beetles, Flies, Birds

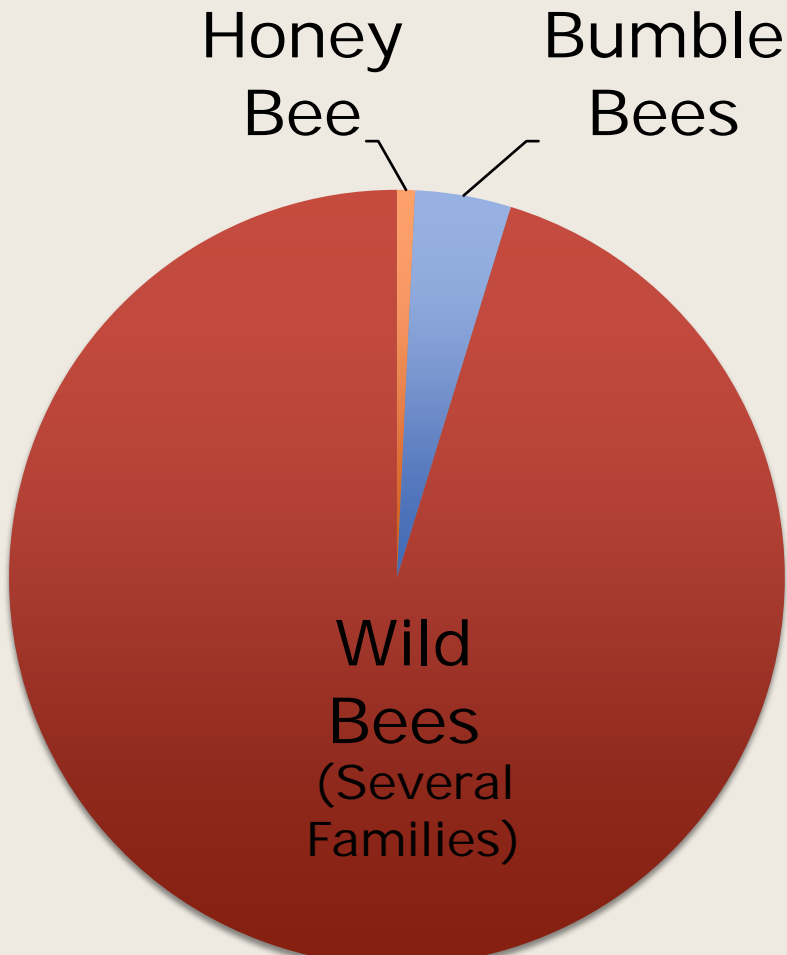


Bees




Detailed insect slides from:
UW Insect Diagnostic Lab


Wisconsin Bees:




Wisconsin Bee Identification Guide

Developed by Patrick Liesch, Christy Stewart, and Christine Wen








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 (~ 1/2 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 3/4 inch and 3/8 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



Leafcutter bees (*Megachile* sp.)

Leafcutter bees are small- to mid-sized bees (~ 3/8 - 1/2 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



Small Carpenter bees (*Ceratina* sp.)

Small carpenter bees are small- to mid-sized bees (~ 3/8 - 1/2 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 (~ 1/8 - 1/2 inch long), although some species can be mid-sized (up to 3/4 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

"Wild" Bees



Sweat Bee



Squash Bee



Leafcutter Bee



Cellophane Bee

All Photos on this slide by Christy Stewart

Butterflies

- 18,000 species of butterflies found worldwide
- They can see red and colorful warm colors
- Organizations:
North American Butterfly Association (www.naba.org),
Monarch Watch (www.monarchwatch.org)
Xerces Society (www.xerces.org)



Painted Lady Butterfly on Zinnia

Monarch Waystation



- Certified through www.MonarchWatch.org
- 100 sq ft, at least 6 hours of sun, provide shelter from predators and elements, at least 10 milkweed plants, nectar plants from spring to fall, plan to maintain

Other Insect Pollinators

Wasps



Moths



Flies



Beetles



Beneficial Insects

- Predators and Parasites
- Decomposers



Predators: Beetles

Ground
beetles



Firefly Larva (w/slug)



Rove
beetles



Minute Pirate Bug



Predators: True Bugs

Damsel Bug



Assassin Bug



Big Eyed Bug



Predators: Stink Bugs



Spined Soldier Bug

Two-Spotted Stink Bug





Predators: Flies

Hover Fly
(Diptera: Syrphidae)

Robber Flies



Lacewings



University of Wisconsin–Madison
Insect Diagnostic Lab

G254-37

Bald Faced Hornets



Predators: Wasps



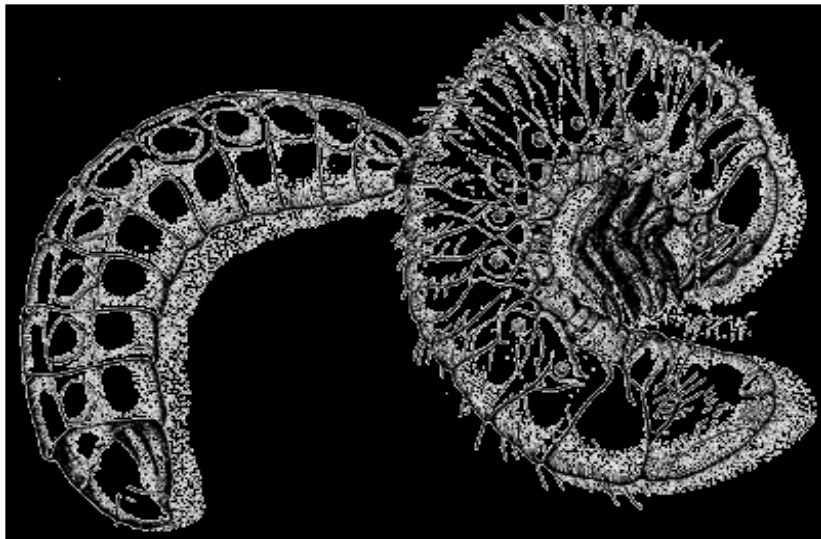
Paper Wasps and Yellowjackets

dison

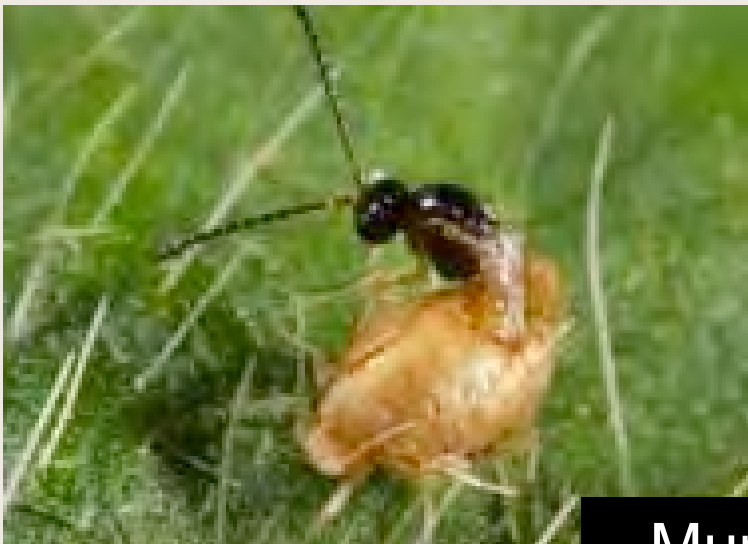


Parasitic Wasps

- Many species known
- Tend to attack only a single specific host
- Some have been purposely released for biocontrol



Parasitic Wasps



Mummies



Parasites: Flies




Pyrgotid Fly
and May/June Beetle



Tachinid Flies




https://insectlab.russell.wisc.edu//



UW Madison Department of Entomology *Insect Diagnostic Lab*

HOME ABOUT US ▾ SUBMITTING SAMPLES ▾ ONLINE ID TOOL RESOURCES ▾ BLOG: "WHAT'S CRAWLING IN THE LAB?"



Insect Diagnostic Lab

Department of Entomology

SAMPLE SUBMISSION FORM

Use our handy form when submitting physical specimens. Check the [sample submission page](#) for instructions.


RECENT BLOG POSTS

- Don't Be an (April) Fool. Look Out For Ticks
March 31, 2017
- Wisconsin's Top Insect Trends of 2016 (#5 - #1)
February 5, 2017
- Wisconsin's Top Insect Trends of 2016 (#10 - #6)

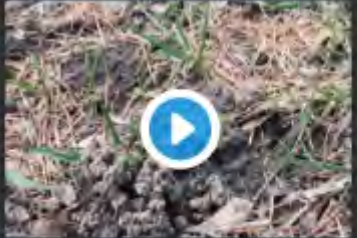
The University of Wisconsin-Madison Insect Diagnostic Lab was established in 1978 to provide timely and accurate identification of insects and insect-damaged plant material from around Wisconsin. Part of the mission of the IDL is to provide support to the [county extension offices](#) throughout the state. In addition, the IDL provides diagnostic services for the general public, private companies, agricultural producers, pest control professionals, the green industry, medical professionals, and other groups.

The lab processes between over 2,000 samples each year. Homeowners are encouraged to check with their [local extension office](#) for help first because many samples can be handled in a more efficient manner locally. Mail in samples, e-mails (with pictures if possible) and walk in samples are all accepted. At the present time there are no charges for Wisconsin residents.

Tweets by @WIBugGuy

 PJ Liesch @WIBugGuy

Want to learn more about our #wildbees? Check out the Wisconsin Bee Identification Guide: lab.russell.wisc.edu/insocidfiles/#bees #pollinators





Bee Stings or bug bits?

- Plantain – common weed
- Use as an effective poultice for bites or stings by crushing the leaves and rubbing the juice on the site



Plants that Support Pollinators



Insectary



- Invite beneficial insect or repel harmful ones
- Lemon Balm, White Alyssum, Fennel, Dill, Parsley, Cosmos, Borage, Sunflower, Achillea, Lemon Verbena

Best Flower Families for Beneficials

- Carrot Family (Apiaceae): coriander/cilantro, dill, fennel
- Aster Family (Asteraceae): blanketflower, coneflower, coreopsis, cosmos, goldenrod, sunflower, yarrow
- Legumes (Fabaceae): generally cover crops of alfalfa, fava bean, hairy vetch, sweet clover
- Mustard Family (Brassicaceae): broccoli, cabbage, mustard greens, mustards, sweet alyssum
- Verbena Family (Verbenaceae): lantana, verbena,

Controlling Pests

- Barriers – row covers, netting
- Encourage beneficial insects
- Insecticides with little residual effects: insecticidal soap, horticultural oil, botanical insecticides such as neem, pyrethrins, rotenone, and sabadilla



Host Plant Finder

<https://nativeplantfinder.nwf.org/>

The screenshot shows the homepage of the Native Plant Finder website. At the top, there is a navigation bar with links for "LEARN MORE", "REGISTER", "LOGIN", and "SET LOCATION". Below this is a dark green header with the "Native Plant Finder [BETA]" logo on the left and three main navigation buttons: "FIND NATIVE PLANTS", "FIND BUTTERFLIES", and "MY LIST". The main content area features the tagline "Bring your garden to life." in a handwritten font. Below the tagline are three large, rounded rectangular buttons. The first button is titled "Find Native Plants" and features a close-up image of pink flowers with a circular icon of a leaf below it. The second button is titled "Find Butterflies" and features a monarch butterfly on pink flowers with a circular icon of a butterfly below it. The third button is titled "My List" and features a garden scene with a circular icon of a clipboard below it. At the bottom of the screen, a Windows taskbar is visible, showing the system tray with a temperature of 29°F, weather "Mostly cloudy", a search bar, and various application icons. The system clock shows the time as 1:36 PM on 1/27/2022.




oak

Quercus

Fagales

 Trees and Shrubs

ATTRACTS:

 389 species of butterflies and moths use this as a caterpillar host plant in your area. Our top 15:



 2 

Bantam Maple Dagger, Retarded ...
Acronicta retardata
Noctuidae



 3 

Rosy Maple Moth, Green-Striped ...
Dryocampa rubicunda
Saturniidae



 4 

Clymene Moth
Haploa clymene
Erebidae



 4 

White Furcula
Furcula borealis
Notodontidae



 6 

Elm Sphinx
Ceratomia amyntor
Sphinxidae



Eastern Tailed-Blue




Cupido comyntas

Lycaenidae


Lepidoptera

ATTRACTED TO:

 This species uses 5 plants as a host for caterpillars in your area.

  ☆ SAVE 213 



pine
Pinus
Pinales

  ☆ SAVE 33 




deer vetch, trefoil
Lotus
Fabales

  ☆ SAVE 28 

lupine
Lupinus
Fabales

  ☆ SAVE 15 

vetch
Vicia
Fabales

  ☆ SAVE 14 

milkvetch
Astragalus
Fabales

Best of the Best Trees (#of butterfly & moths supported)

- Oak (534)
- Willow (455)
- Birch (413)
- Poplar (368)
- Crabapple (311)
- Pine (203)
- Spruce (156)
- Basswood (150)

Compare: Norway Maple (0)



Best of the Best Perennials/Annuals (# of butterfly & moths supported)



- Goldenrod (115)
- Asters (112)
- Sunflower (73)
- Joe Pye Weed (42)
- Morning Glory (39)
- Sedges (36)
- Lupine (33)
- Black-eyed Susan (17)
- Milkweed (12)

Larval Host Plants – some examples

- Monarchs – Milkweed (*Asclepias*)
- Swallowtails - Golden Alexanders (*Zizia aurea*), parsley, dill, and fennel
- Orange Sulphur, Painted Lady, moths, Frosted Elfin – Wild Lupine (*Lupinus perennis*)
- Moths – Bee Balm (*Monarda*)



Parsleyworm (Swallowtail) on Parsley

Top Plants for Pollinator Gardens

- **Spring blooming**: Red columbine (*Aquilegia canadensis*), Wild geranium (*Geranium mac ulatum*), Blue wild indigo (*Baptisia australis*), Ohio spiderwort (*Tradescantia ohiensis*), Large-flowered beardtongue (*Penstemon grandiflorus*), Golden Alexanders (*Zizia aurea*)
- **Summer blooming**: Rough blazing star (*Liatris aspera*), Prairie blazing star (*Liatris pycnostachya*), Common milkweed (*Asclepias syriaca*), Butterfly milkweed (*Asclepias tuberosa*), Yellow coneflower (*Ratibida pinnata*), Wild bergamot (*Monarda fistulosa*)
- **Fall blooming**: Cardinal flower (*Lobelia cardinalis*), Common boneset (*Eupatorium perfoliatum*), Stiff goldenrod (*Oligoneuron rigidum*), Showy goldenrod (*Solidago speciosa*), New England aster (*Symphotrichum novae-angliae*), Smooth blue aster (*Symphotrichum laeve*)

How You Can Get Involved

1. Knowledge, become a citizen scientist
2. Address habitat loss in your backyard
3. Support organizations that preserve pollinators
4. Add host and food plants to your garden



Organizations

- Monarch Watch <http://monarchwatch.org/>
- Wild Ones www.wildones.org Website on native plants, natural landscapes
- Pollinator Partnership www.pollinator.org Organization dedicated to the protection and promotion of pollinators and their ecosystems. Download a free 'Pollinator Friendly Planting Guide'.

Resources

- ***Bringing Nature Home***, Douglas W. Tallamy, Timber Press
- ***Pollinators of Native Plants, Wasps, Bees***, Heather Holm, Pollination Press
- “Supporting native bees: Our essential pollinators”, UW Extension bulletin G4001
“Pollinators” UW Garden Facts XHT1213
<https://learningstore.uwex.edu>
- Wisconsin Bee Identification Guide,
<https://hort.extension.wisc.edu/files/2016/08/WI-BEE-IDENTIFICATION-GUIDE.pdf>

Resource- "Selecting Plants for Pollinators"



<http://www.pollinator.org/PDFs/Laurentian.rx9.pdf>

www.pollinator.org
Pollinator Partnership

Resources

- UW Madison Insect Diagnostic Lab
<https://insectlab.russell.wisc.edu>
- Bug Finder Identification – searchable database
<http://www.insectidentification.org/>
- National Wildlife Federation-Native Plant Finder
<https://nativeplantfinder.nwf.org/>
- U.S. Department of Agriculture
<https://www.usda.gov/pollinators>
- UW Extension – Horticulture- Pollinators
<https://hort.extension.wisc.edu/pollinators/>



Questions/Wrap- up

Sue Reinardy

UW Extension Master Gardener

www.GardenTrueNorth.com

sreinardy@centurytel.net