Pollinator Gardens

A DIY Workbook

FLATHEAD CONSERVATION DISTRICT
Locally-led Conservation Since 1945

FLATHEAD CONSERVATION DISTRICT POLLINATOR INITIATIVE

Why Pollinators Matter

We can thank pollinators for at least every third bite of food we eat. That is, approximately 75% of the world's flowering plants and 35% of our food crops rely on animal pollinators to reproduce (MT NRCS). They're also necessary for the plants we use for spices, medicines, raw materials, and even fabrics. Indirectly, we also rely on pollinators for clean air, healthy habitats, and beautiful landscapes. This is because without pollinators, plant communities worldwide could collapse.

Pollination occurs when pollen is transported from the anther (male part) of one plant to the stigma (female part) of another plant. This process fertilizes the plant and results in the production of fruits and seeds. Pollinators act as a vector transporting pollen grains from plant to plant. When pollinators visit plants their bodies pick up pollen grains that are then deposited on the next plant, transferring genetic material vital for plant reproduction (Pollinator Partnership).

Montana's Native Pollinators

In Montana, insect pollinators include native bees, honey bees, beetles, flies, moths, and butterflies. Vertebrate pollinators include birds, bats, and small mammals. Almost 40 agricultural crops grown in Montana rely on pollination by these species (MT NRCS). Montana is also one of the top honey-producing states in the nation, which wouldn't be possible without our hard-working pollinators.

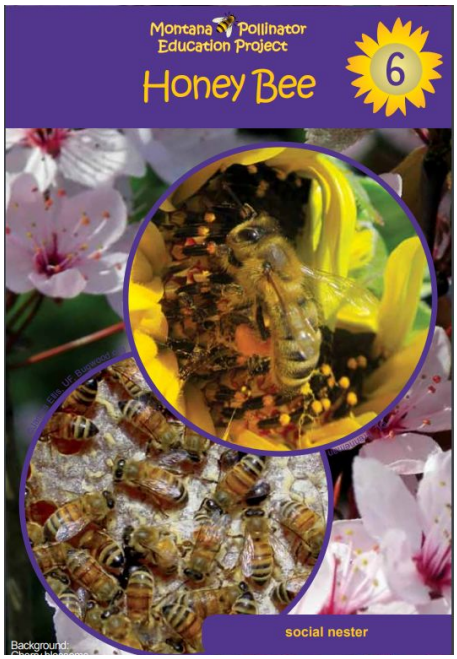
Threats to Montana's Pollinators

According to the International Union for Conservation of Nature (IUCN), at least 185 pollinator species are considered threatened or extinct across the world. Currently in the United States 4 bat, 22 bird, 8 bee, and 38 other insect pollinator species are listed as endangered under the Endangered Species Act (U.S. Fish and Wildlife Service: Pollinators). The largest threats to native pollinators include:

- Habitat loss and fragmentation
- Excessive or improper use of pesticides and insecticides
- Disease and parasites
- Competition from invasive species

Due to these threats, pollinator populations world-wide are decreasing in both abundance and range. If further declines are not prevented or reversed, both wild habitats and croplands could be detrimentally affected. Continued declines could likely have severe economic and ecological consequences.

Get to know your native pollinators!



Montana Pollinator Education Project

Yellow-Faced Bee 7

social nester

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Monarch Butterfly 8

native pollinator

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Hawk Moth 9

flies up to 30 miles per hour

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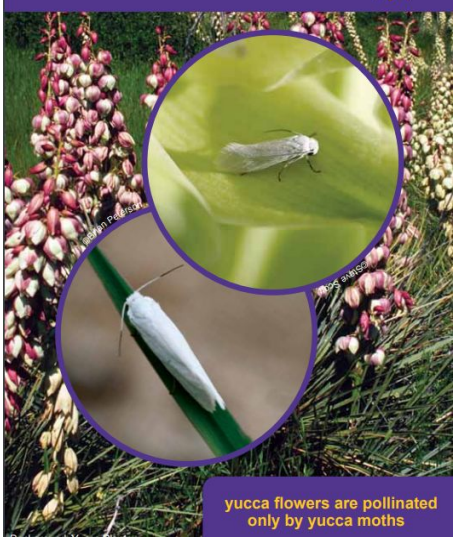
Western Tiger Swallowtail Butterfly 10

tails on wing bottoms

Montana Pollinator Education Project

Yucca Moth 11



yucca flowers are pollinated only by yucca moths

Montana Pollinator Education Project

Mining Bee 12

solitary nester, but in large colonies

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Cuckoo Bee 13

cleptoparasite

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Digger Bee 14

solitary nester, but in large colonies

Montana Pollinator Education Project

Polyester Bee 15

solitary nester, but in large colonies

Understanding pollinators' needs

Foraging habitat

Due to development and monoculture farming practices, pollinator habitat is shrinking across the globe. Flathead County is the second fastest growing county in the state, so providing areas of pollinator forage is one of the best ways you can support our native pollinators.

Through the seasons

Pollinators need an abundance of flowering plants from early spring through late autumn. When designing a pollinator garden, we recommend 3-4 species for each spring, summer, and autumn. Below, write down what flowering species are on your property and what seasons they bloom in. This will help you to identify any seasonal gaps you may have and what species you should focus on for future plantings.

Species	Bloom Time

Mostly native

Both native and non-native species can provide some forage for pollinators. However, many of our native pollinators have co-evolved with our native plants and either prefer or require these native plants to flourish. Additionally, many cultivars have been selected for specific visual traits but may not produce much pollen or provide nesting habitat.

When planning a pollinator garden we recommend using mostly native species when possible. You might choose to plant a non-native species if you are using it as a cover crop for noxious weed management or you have a preference for a particular plant. If doing so, make sure to also provide native plants and ensure the species you choose is not a weed (yellow toadflax, for example, was originally sold in nurseries as butter-and-eggs before it escaped cultivation and became a noxious weed).

Tip:

Need some ideas for pollinator-friendly, native species? The Center for Native Plants in Whitefish has put together a great list. You can find it on their website or at:
https://centerfornativeplants.com/wp-content/uploads/2019/02/cnp-pollinator-species.pdf

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Diversity of species

When we refer to pollinators we tend to think of only bees and butterflies. But our native pollinators also include beetles, moths, ants, bats and other small mammals. Each species has unique preferences and requirements so supporting pollinators as a whole requires planting a diversity of species. When planning a pollinator garden, don't forget to consider both the type of plant and the style of plant. Make sure your garden includes the following:

Type

- Ground covers
- Grasses
- Trees

Style

- Large and small flowers
- Flat and deep flowers
- A variety of color

Notes:

Nesting and Overwintering Habitat

Creating pollinator habitat is about more than just providing flowers and forage. Pollinators also need safe locations for nesting and overwintering. The monarch butterfly is the only pollinator in North America that migrates in the winter. All our other pollinators overwinter as either eggs, pupae, or adults. Some burrow into the ground, some lay eggs in the hollow pith of dead plants, some make use of abandoned tree cavities.

Common locations include:

- dry, barren areas in well-drained soils
- piles of sticks and woody debris
- standing dead vegetation or trees
- undisturbed vegetation

What you can do:

- Be OK with “messy” gardening
- Leave some areas bare with no mulch
- Pile dry sticks and leaves near a shed or tree
- Leave woody vegetation standing in the garden after the fall harvest

Artificial Nest Sites

Artificial nest boxes or “bee condos” can be a great addition to any garden, and if made correctly they can provide beneficial habitat for pollinators. When purchasing or making a bee condo follow the recommendations of a trusted source, such as the Xerces Society, to avoid creating a home for wasps or a buffet for bee predators. Methods differ for different species so also consider making more than one type of artificial nest to support a diversity of pollinators. Detailed instructions can be found on this fact sheet: https://xerces.org/wp-content/uploads/2008/11/nests_for_native_bees_fact_sheet_xerces_society.pdf

Designing a Pollinator Garden

One of the best things about a pollinator garden is that you can design it to meet your needs as well as pollinators. You can create a beautiful and functional pollinator garden with just about any space and budget. The basic ingredients for a pollinator garden are forage, nesting and overwintering habitat, and pesticide free areas. Below are a few design considerations to help you combine those essential ingredients to suit your space.

Design considerations

Budget

It's easy to get ahead of yourself and start planting flowers everywhere without a plan, but this often results in gardens growing out of control, spending hours dragging hoses around, and a noxious weed management nightmare. When designing a pollinator garden, make sure to consider your budget. Start small and add on as you go. Make a budget and stick to it. That way you won't be overwhelmed by the task or the completed project management. Use the table below to get started:

Item or Task	Budget
Plants	
Soil amendments and/or mulch	
Containers or edging	
Irrigation or watering system	
Noxious weed management	
Tools and miscellaneous	

Seeding or container planting

Both seeding and planting mature species can provide pollinator habitat. In general, seeding is less expensive but can take longer to produce results. A good time to seed native wildflowers is in the fall so they germinate in early spring. Be wary of "wildflower" seed packets sold commercially. Many of these packets contain species that are not native and can spread aggressively. Beneficial native wildflowers to look for include blue flax, blanket flower, and coreopsis. These species are commonly included in seed mixes, but there are many other options too.

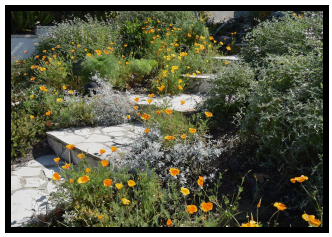
Planting mature species is a great way to get your garden started immediately, especially if you have a smaller area or an area you'd really like to showcase. Once you've identified what species you already have and what season they bloom in (table on page 4) select plants for the seasons you don't have well represented.

Tip:

Use the Lady Bird Johnson Wildflower Center database to query plant lists for different bloom times. The searchable plant list can be found here: https://www.wildflower.org/plants/

Making use of unused spaces

Some of the best locations for a pollinator garden are those areas that you don't know what to do with. This can be the ditch between your yard and road, the corners of your property, around utilities or mail boxes, fencelines, or even under a window.



Irrigation and watering

For water conservation and to help reduce weed spread, use drip systems for container plantings, individual beds, and hanging pots. That way you can control the amount of water each individual plant is receiving. For seeded areas, use calibrated micro-sprayers so you can water only the areas you want and not the sidewalks. Also make sure your water system has a timer. This will prevent overwatering and allow you to water in the evenings or early mornings when most effective. For smaller spaces you can simply use an outdoor spigot with an inexpensive timer, ½ inch tube, and different nozzles. For larger spaces you will likely need a professional to instal a zoned irrigation system.

Bee-friendly water features

Most pollinators only travel short distances when foraging so it's important to provide a source of water. However, open standing water can lead to mosquitoes and drowned bees. Make a bee-friendly water source by adding materials such as marbles, stones, or bricks to a shallow container and filling it with water to just below the added material. This will provide bees a safe place to land when seeking water.

Notes:

Design Your Garden

Sketch your property layout and include locations where you already have flowering plants and areas of nesting and overwintering habitat. Next include any features you'd like to add to your garden. Remember to start small, stick to your budget, plant for the seasons, and make use of those unused spaces.

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More information on pollinators and creating pollinator gardens available at www.FlatheadCD.org