

Central Pennsylvania Pocket Guides

Plants For Bees



Bee Gardens

Class Insecta, Order Hymenoptera

BELOVED RESIDENTS IN our gardens, bees are the most effective pollinators. Pennsylvania is home to 437 species and there are at least 4,000 species of bees in the United States representing six of the seven families.

The feeding behavior of bees is specialized for the pollination of flowers. Most bee's diets come entirely from flowers, which requires them to physically connect with the plant's reproductive parts. Nectar is a source of carbohydrates and pollen is a source of protein and lipids. The larvae particularly depend on pollen for development.

Some species of bees are specialists, meaning they only feed on certain flowers. For example, squash bees (*Peponapis pruinosa*) feed almost exclusively on cucurbit flowers. Other bees are generalists, visiting most types of flowers in a given area. Bumble bees (*Bombus* spp.) are particularly good pollinators in part because they are generalists, visiting a wide variety of flowers. They are also capable of flying in cold, early morning temperatures. This extends the amount of time they can feed. Some plants such as tomatoes and blueberries require a very specific type of pollination

BEES ALSO HAVE physical characteristics that make them great pollinators. The electrostatically charged hairs on their body and legs called scopa pick up pollen to be inadvertently carried from flower to flower. Typically, bees have more hair than wasps or flies making them better pollinators.

Bees are crucial for agriculture, as insect pollination services contribute \$34 billion to agriculture in the U.S. annually. The Western honey bee (*Apis mellifera*) is a non-native domesticated species that is specifically managed for its pollination services. Honey bees are social bees with three social castes within a hive; queen, worker, and drone. Each caste plays a role in the function of the hive. These bees are preferred for commercial farm pollination due to their large numbers; a single hive may have tens of thousands of individuals.







Although most well-known bees such as honey bees and bumble bees are social, 90% of all bee species are solitary, nesting in either tree cavities or underground burrows. After mating, an individual female single-handedly creates brood cells, collects pollen, and lays eggs.

SOME SPECIES OF solitary bees nest near each other, creating aggregations. For example, squash bees (*Peponapis pruinosa*) will nest nearby in loose soil surrounding pumpkin fields, and Eastern carpenter bees (*Xylocopa virginica*) collectively excavate wooden structures.

Bees in North America are in the families Andrenidae, Colletidae, Melittidae, Halictidae, Megachilidae, and Apidae.

Those with bee gardens will enjoy a great diversity of bees, as they come in a variety of shapes, sizes, and colors. Bees are not aggressive when feeding on flowers and can be safely viewed from a short distance. Planting flowers that provide optimal nutrition for bees support their local populations, and in turn, support the entire ecosystem.

Plant Symbols Key

 Full Shade	 Dry
 Part Sun	 Moist
 Full Sun	 Wet

Eastern Redbud

Cercis canadensis



Floral Phenology



Type	Deciduous Tree
Sun	☀ ☀
Water	💧 🍷
Size	20' to 30' Tall 30' Spread
Soil	Neutral Alkaline
Tolerances	Deer Clay

Spring Beauty

Claytonia virginica



Floral Phenology



Type	Herbaceous Perennial
Sun	☀ ☀
Water	💧
Size	0.5' to 0.75' Tall and Spread
Soil	Acidic Neutral
Tolerances	Drought, Flooding, Salt

Serviceberry

Amelanchier canadensis



Floral Phenology



Type	Deciduous Tree
Sun	☀ ☀
Water	💧
Size	25' to 30' Tall 15' Spread
Soil	Acidic Neutral
Tolerances	Clay

Common Cow Parsnip

Heracleum maximum



Floral Phenology



Type	Herbaceous Perennial
Sun	☀
Water	💧
Size	3' to 5' Tall 2' to 3' Spread
Soil	Acidic Neutral Alkaline
Tolerances	Clay

Clustered Mountainmint

Pycnanthemum muticum



Floral Phenology

Floral Phenology	
J F M A M J J A S O N D	
Type	Herbaceous Perennial
Sun	☀ ☀
Water	💧 💧
Size	2' to 3' Tall 3' to 4' Spread
Soil	Acidic Neutral
Tolerances	Drought Erosion

Hoary Verbena

Verbena stricta



Floral Phenology



Type	Herbaceous Perennial
Sun	☀ ☀
Water	💧
Size	2' to 3' Tall 1' to 1.5' Spread
Soil	Dry Moist Alkaline
Tolerances	Rabbit Deer Drought

Buttonbush

Cephalanthus occidentalis



Floral Phenology



Type	Shrub
Sun	☀
Water	☹️ 🌑 🌒
Size	5' to 12' Tall 8' Spread
Soil	Acidic Neutral Alkaline
Tolerances	Flooding Drought

American Blue Vervain

Verbena hastata



Floral Phenology



Type	Herbaceous Perennial
Sun	☀
Water	💧
Size	1' to 6' Tall 12" to 18" Spread
Soil	Slightly Acidic to Neutral
Tolerances	Deer Drought

Wild Bergamont

Monarda fistulosa



Floral Phenology



Type	Herbaceous Perennial
Sun	☀ ☀
Water	💧 💧
Size	2' to 4' Tall 1' to 2' Spread
Soil	Acidic Neutral Alkaline
Tolerances	Drought

Frost Aster

Symphyotrichum pilosum



Floral Phenology



Type	Herbaceous Perennial
Sun	☀
Water	💧
Size	3' to 5' Tall 2' to 4' Spread
Soil	Acidic Neutral
Tolerances	Frost Drought Erosion

NOTES FROM THE GARDEN

THIS FIELD GUIDE was created by Aubrey Miller, Heather Frantz, Christina Grozinger, and Harland Patch. Illustrations produced by Victoria Millsap. Funding was provided by the Center for Pollinator Research, the Huck Institutes of the Life Sciences, and the Penn State College of Agricultural Sciences.

Plants in this guide were selected for a high degree of attraction in most temperate North American landscapes.



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