



*The Great Pollinator Partnership poster has been reproduced as part of a cooperative effort of the North American Pollinator Protection Campaign to raise awareness of the importance of pollinators to our Nation's future.*

## **The Simple Truth: We Can't Live Without Them**

Pollination is not just fascinating natural history. It is an essential ecological function. Without pollinators, the human race and all of Earth's terrestrial ecosystems would not survive. Over 80 percent of the world's flowering plants require a pollinator to reproduce. Animals that assist plants in their reproduction as pollinators include species of bats, butterflies, moths, flies, birds, beetles, ants, and bees.





## What Is Pollination and Who Does It?

Pollinators visit flowers in search of food, mates, shelter and nest-building materials. The secret bond of the partnership is that neither plant nor pollinator populations can exist in isolation – should one disappear, the other may be one generation away from disaster.

**Pollination** is the act of transferring pollen grains from the male [anther](#) of a flower to the female [stigma](#). The goal of every living organism, including plant, is to reproduce. Successful pollination allows plants to produce seeds. Seeds are key to producing the next generation of plants, which provide food for the next generation of pollinators and other wildlife.

Rooted in place, plants need an agent to transfer pollen for them. Wind, water and a wide host of animals move the pollen from flower to flower. This is the act of pollination.

Plants and [pollinators](#) have co-evolved physical characteristics that make them more likely to successfully interact.



## Why do pollinators visit flowers?

Pollinators obtain food in the form of energy-rich nectar and/or protein-rich pollen from the flowers they visit. In return, the pollinated flowers are able to develop and produce seed.

While food is often a sufficient lure for pollinators, flowering plants also attract pollinators using a combination of shape, scent and/or color. For example, some plants use mimicry to deceive animals into visiting their flowers without having to provide a reward.

## Pollinator Syndromes

The flower type, shape, color, odor, nectar, and structure vary by the type of pollinator that visits them. Such characteristics are considered pollination syndromes and can be used to predict the type of pollinator that will aid the flower in successful reproduction.

Pollinator Syndrome Traits Table								
Trait	Pollinator							
	Bats	Bees	Beetles	Birds	Butterflies	Flies	Moths	Wind
Color	Dull white, green or purple	Bright white, yellow, blue, or UV	Dull white or green	Scarlet, orange, red or white	Bright, including red and purple	Pale and dull to dark brown or purple; flecked with translucent patches	Pale and dull red, purple, pink or white	Dull green, brown, or colorless; petals absent or reduced
Nectar guides	Absent	Present	Absent	Absent	Present	Absent	Absent	Absent
Odor	Strong musty; emitted at night	Fresh, mild, pleasant	None to strongly fruity or fetid	None	Faint but fresh	Putrid	Strong sweet; emitted at night	None
Nectar	Abundant; somewhat hidden	Usually present	Sometimes present; not hidden	Ample; deeply hidden	Ample; deeply hidden	Usually absent	Ample; deeply hidden	None
Pollen	Ample	Limited; often sticky and scented	Ample	Modest	Limited	Modest in amount	Limited	Abundant; small, smooth, and not sticky
Flower Shape	Regular; bowl shaped – closed during day	Shallow; have landing platform; tubular, c	Large bowl-like, Magnolia	Large funnel like; cups, strong perch support	Narrow tube with spur; wide landing pad	Shallow; funnel like or complex and trap-like	Regular; tubular without a lip	Regular: small and stigmas exerted







## From the World of Pollinators

### Hummingbirds

Hummingbirds visit and pollinate plants that have tubular red, yellow or orange flowers. They thrust their long slender bills deep into the flowers for nectar, withdrawing heads dusted with pollen.

### Moths & Bats

After dark, moths and bats take over the night shift, visiting nocturnal blooms heavy with fragrance and large amounts of dilute nectar.

### Butterflies

Highly perched on their long thin legs, butterflies are not efficient pollinators. Butterflies select flowers based on shape. Unlike bees that can hover while feeding, butterflies need a place to land because they cannot feed while flying.

### Bees

Bees are the most efficient pollinators. In the United States, there are 4000 species of native bees. Familiar bees visiting garden flowers are the colorful, fuzzy, yellow-and-black striped bumblebees, metallic-green sweat bees, squash bees and imported honey bees.

### Beetles

Beetles co-evolved with primitive flowering trees, such as magnolias. Beetle-pollinated flowers are very fragrant, large, and bowl-shaped. The shape makes it easier for the clumsily-flying beetles to land within the flower, where they eat their way through petals and other floral parts. They even defecate within flowers, earning them the nickname "mess and soil" pollinators.

### Flies

Flower flies such as syrphids masquerade as bees and wasps but have only one pair of wings. Putrid smelling blossoms are an adaptation to attract certain fly pollinators. Even male mosquitoes (relatives of flies) get in on the act since they pollinate certain orchids.

### Wasps

In the tropics, minute fig wasps have co-evolved with fig plants. This partnership has been so successful that today, there are over 900 species of fig plants, each with its own species of wasp.

### Unusual Pollinators

Flowers have enlisted the aid of some very unusual pollinators. In Australia, charming big-eyed, long-nosed marsupial mammals called Honey Possums drink nectar from Banksia blooms. On the island of Madagascar, Black-and-white Ruffed lemurs are the pollinators of traveler's tree (*Ravenala madagascariensis*). Off the coast of New Zealand, a large island gecko moves pollen between flowers of New Zealand flax (*Phormium tenax*) plants.







## What You Can Do: Gardening for Pollinators

### Why Garden with Native Wildflowers?

Native plants are adapted to the local climate and soil conditions where they naturally occur. A diversity of native flowering plants in your garden will provide a wonderful habitat for a large variety of native pollinators.

Follow these simple steps to create a pollinator-friendly landscape around your home or workplace:

Use a wide variety of wildflowers so there is always a flower in bloom from early spring through late fall. This will help provide food and other habitat needs for pollinators to survive throughout the changing seasons. Don't forget that night-blooming flowers will support nocturnal pollinators, and red, tubular flowers will attract hummingbirds.

Avoid modern hybrid flowers, especially those with "doubled" flowers. Often plant breeders have unwittingly left the pollen, nectar and fragrance out of these blossoms while creating the "perfect" blooms for us.

Eliminate pesticides whenever possible. If pesticides are used, apply the least-toxic materials and spray at night when bees and most other pollinators are not as active. Before purchasing, read labels carefully and use the product according to the instructions.

Include larval host plants in your landscape. If you want colorful butterflies, grow plants for their caterpillars. They WILL eat them, so place them where unsightly leaf damage can be tolerated. Accept that some host plants are less than ornamental if not outright weeds. A butterfly guide will help you determine the plants you need to include.

Create a damp salt lick for butterflies and bees. Use a dripping hose, drip irrigation line, or place your bird bath on bare soil to create a damp area. Mix a small bit of table salt (sea salt is better!) or wood ashes into the mud.

Spare that limb! By leaving dead trees, or at least an occasional dead limb, you provide essential nesting sites for native bees.

Learn more about pollinators; visit your local library or the World Wide Web for more information about native wildflowers and pollinators in your region.



## **Global Action Is Required**

Around the world, pollinators are declining due to factors that threaten all biodiversity. Loss of habitat is the principal reason, followed by improper use of pesticides, pollution, and invasive species.

Policymakers, natural resource managers, private landowners, and others want to make informed decisions that consider the needs of pollinators. Consumers can choose products that have been produced in a pollinator-friendly manner. Educators can emphasize the importance of pollinators; teach about their life histories; and instill an appreciation for the essential role played by pollinators in living systems.

Everyone's future flies on the wings of pollinators.

To find out more about the Pollinator Partnership, please visit <http://www.pollinator.org>.

