

POLLINATORS



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What are pollinators?

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. Animals that assist plants in their reproduction as pollinators include species of bats, butterflies, moths, flies, birds, beetles, ants, and bees.

Fun Fact

Pollinators are responsible for 1 out of every 3 bites of food we eat!

Why do we need them?

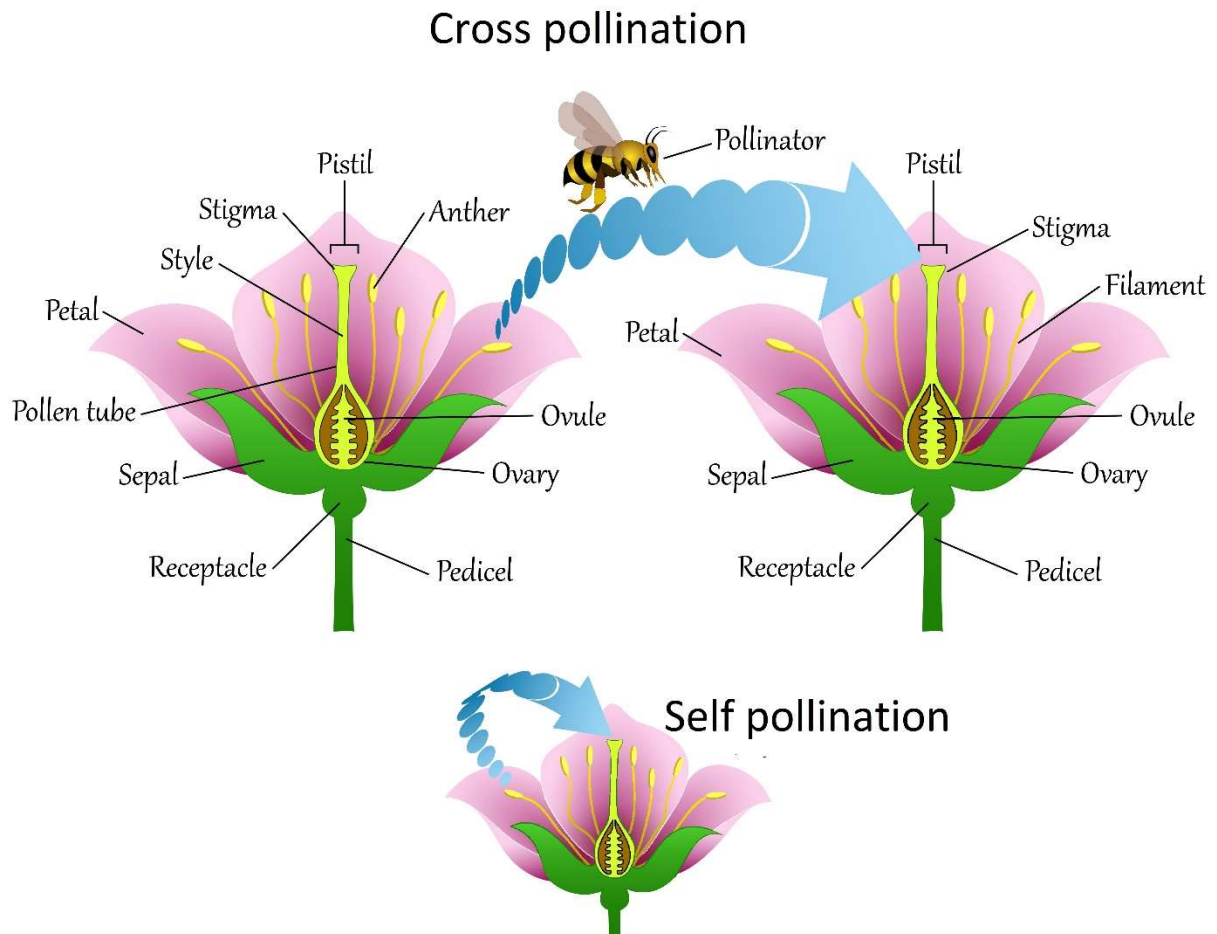
Pollinators—including birds, bats, and bees—pollinate fruits, vegetables, and other crops that provide us with food, fiber, drugs, and fuel. In addition to pollinating food crops like apples, almonds, and pumpkins, bees pollinate forage crops including alfalfa and clover that provide feed for cattle and other animals. Over 80 percent of the world's flowering plants require a pollinator to reproduce. Without pollinators, the human race

and all of Earth's terrestrial ecosystems would not survive.

Some of the common & unusual pollinators

- Ants
- Bats
- Bees
- Beetles
- Birds
- Butterflies
- Flies
- Moths
- Wasps
- Honey possums
- Reptiles (lizards, geckos and skinks)
- Slugs
- Snails
- Gnats

Parts of a flower & Self-pollination vs Cross pollination



Self-pollination occurs when pollen from one flower pollinates the same flower or other flowers of the same individual.

Cross-pollination, occurs when pollen is delivered from the stamen of one flower to the stigma of a flower on another plant of the same species.

Pollinator syndrome

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								
Trait	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

Activity 1: Here are a set of flowers. For each of these flowers, write a profile based on the pollinator syndrome table. *(For younger kids or if you don't have access to information about any of these flowers, use the key to jump to the next activity)* For example –

Flower #1

 Sunflower	Color: Bright Yellow Odor: Sweet fragrant smell Nectar: Present Pollen: Present Flower Shape: Flat petal platform, bull's eye design in the center of the flower Other: Blooms during day time
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 Fuchsia	Color: Odor: Nectar: Pollen: Flower Shape: Other:
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 Cacao flower	Color: Odor: Nectar: Pollen: Flower Shape: Other:
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 Daisy	Color: Odor: Nectar: Pollen: Flower Shape: Other:
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 Gardenia	Color: Odor: Nectar: Pollen: Flower Shape: Other:
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 Mango	Color: Odor: Nectar: Pollen: Flower Shape: Other:
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Activity 2: Feed these pollinators. I have included the pollinator profile for each of these pollinators. Which flower from the above list will provide perfect platform for each of these pollinators (there can be more than one pollinator that visit each flower, just make more copies).

 Lady bug beetle	Beetle: Many beetle species eat pollen, so the plants they visit must produce ample amounts of pollen to make sure that there is enough left to pollinate the flower after the beetles are finished eating! Beetles are attracted to spicy or fruity odors, and most of them need a wide opening in the flower, because they are clumsy fliers.
 Hummingbird	Hummingbird: have long beaks and brush-like tongues, and they are good pollinators of many plants in the Western hemisphere. They generally look out for long, tube-shaped, flowers colored brightly red, pink, purple or orange.
 Greater long-nosed bat	Bats – Nectar-eating bats are attracted to pale or white flowers that blossom after dark. Bats search for flowers with a large amount of nectar and that emit strong, musky or fruity odors. These flowers include the agave and many other tall, cactus species.

 Honey bee	Bees -- can fly at about 7 miles per hour and have to beat their wings 190 times per second to do it! Bees are constantly on the lookout for brightly colored flowers with sweet scents. Bees tend to prefer flowers that they can walk on to sip nectar.
 Monarch butterfly	Butterflies and Moths –Butterflies and moths need a place to land on the flowers that they visit, so they prefer broad, flat-faced flowers. Since they have long, straw-like mouth parts, they can suck nectar from deep within the flower
 Hover fly	Flies: Visit flowers during the day time. They land on flower petals to gather pollen. Flies are attracted to flowers that smell rotten. They like flowers that are pale white or brown colors.

Further reading: A beautiful TED talk about this important topic [The Hidden beauty of Pollination](#)