Pretty Things That Pollinate


Bumble bee


Sweat bee


Syrphid fly


Soldier beetle

Jody Green, PhD
Extension Educator, Lancaster County

Importance of Pollinators

Pollination is the process in which plants reproduce. It involves the moving of pollen grains from the male part of the plant to the female part of the plant of the same species, and is required for germination and fertilization.

Pollinating insects provide an ecological service essential to the health of the ecosystem, providing food for both humans, wildlife and livestock. An insect's intent is not to promote plant reproduction, rather it is the result of natural activities such as foraging for food and mating. During these activities, pollinating insects pick up pollen grains on their body, which accidentally rub off or drop from their bodies to blossoms during their multiple flower visits.

The Relationship Between Plants and Insects

Pollinating insects include bees, flies, beetles, moths and butterflies. What these insects have in common is their ability to fly from flower to flower, giving them the opportunity to transfer pollen. Pollinating insects come in many sizes, shapes and colors.

Each insect has varying abilities to move pollen, which may be limited by the type and location of hair on the body, specialized receptacles used for pollen-carrying or the mouthparts used to feed. Requirements for pollinators include a diverse, flower-rich foraging area, suitable host plants that bloom at different times of the year, nest sites for egg laying and a safe environment for foraging and overwintering.

Bees, flies, beetles, moths and butterflies are considered pollinators in the adult form. What all insects from these groups have in common is that they undergo complete metamorphosis (egg, larvae, pupae, adult) to change from an immature to an adult. It is important to recognize that the larval form of many pollinators do not resemble adults, and may, in some cases, be considered pests. Immature insects differ from adults in terms of physical form (i.e. different mouthparts, lack of wings), function (i.e. predator, parasite), food source, habitat and host plant.

Because of this paradox, consideration must be taken to provide plants for pollinators, as well as host plants suitable for immature insects from these groups. It is also important to consider nesting habitats for pollinators throughout the winter, when we do not see them. Many rest or develop in protected underground burrows, wood piles, leaf litter, compost piles and other protected areas.

Bees (Not the Honey-Making Kind)

The most important pollinators are bees. There are over 4,000 species of native bees in North America, many recognized as superior pollinators to honey bees, and therefore, deserve attention. Native bees include a variety of bumble bees, sweat bees, leafcutter bees, carder bees, carpenter bees, mason bees and digger bees. Bees can be social or solitary, ground or cavity nesters, generalist or specialist feeders and some are parasites of other bees.

What they all have in common is they deliberately gather pollen and bring it back to the nest to either feed their offspring or provision nesting cells for future offspring. It is this contact with pollen that allows them to be great pollinators, many of them with specialized hairs or places where pollen can easily be collected and scraped off later. Bees also have flower constancy, which means they visit particular plant species on their foraging trips which increases the transfer of pollen grains.

While wasps are nectar feeders as adults, they feed their larvae insects rather than pollen. They are also less hairy, so unable to transfer pollen as effectively as bees.

Flies Are Pollinators Too

After bees, flies are the second most valued commercial pollinators, known for their contribution to strawberry, onion and carrot crops. Flies are widely distributed, have great abundance and species richness.

The flies that are seen commonly and in large numbers visiting flowers are called syrphid flies. Syrphid flies are a rather large group, and are sometimes referred to as flower flies or hover flies because of their behavior. The main reason they are overlooked is because they mimic bees with their yellow and black coloration. Flies only have one pair of wings, while bees and wasps will have two pairs. Flies also have short, thick, down-turned antennae and lack body hair. Syrphid fly larvae are predaceous and are natural enemies of plant-sucking insects such as aphids.

Other pollinating flies include blow flies, which feed on rotting flesh as maggots, and tachinid flies, which are parasitoids of other insects.

Pollinating Beetles

Beetles have chewing mouthparts as immatures and adults, and many are predaceous in both forms. Some beetles feed on pollen, nectar, sap or fruit and visit specific flowers.

The beetles that Nebraskans see frequently on flowers include soldier beetles. Soldier beetles are yellow and black in color, with soft, flexible wing covers and long antennae. Beetle larvae are not commonly seen, as they are predators that hunt through leaf litter and debris and feed on other invertebrates. As adults, soldier beetles gather in droves to feed and mate on flowers such as sunflowers, coneflowers, tansy and goldenrod. Solider beetles and other pollinating beetles get their protein sources from pollen. They do not damage the flowers or the plants and are harmless to people.

Beautiful Butterflies and Hungry Caterpillars

The most recognized and charming of pollinating insects are the butterflies. People often want to see more of them, so intentionally plant flowers to attract them to the landscape.

Butterflies and moths have siphoning mouthparts, which resemble a long, curled up straw for gathering nectar from flowers. Moths and butterflies belong to the same order, but moths are generally not as brightly colored and most fly by night, which is why moths are significant pollinators of night-blooming plants. Butterflies and moths do not actively gather pollen, but while they forage for nectar, the pollen grains become stuck to their body or tongue and get transferred to flowers.

The larvae of moths and butterflies are caterpillars, which have chewing mouthparts used to feed on the foliage of plants. Adults lay eggs on specific host plants so caterpillars can immediately start feeding after emergence.

So, while people may encourage the nectaring of adults in the garden, they fail to realize that caterpillar host plants are also necessary in the landscape. The use of pesticides to control for caterpillars will negatively affect butterfly populations. There are many field guides available to help identify caterpillars, butterflies and moths, as well as help determine which ones you want to see more of in your yard, and act as a guide to provide plants for all life stages.


Black swallowtail caterpillar


Black swallowtail butterfly


Painted lady butterfly


Monarch caterpillar


Monarch butterfly


Skippers


Hummingbird clearwing moth

Photos by Jody Green, Nebraska Extension in Lancaster County