

Astounding Pollination Collaborations

By Cindy Murray

Last week I wrote on plunger pollination and other strategies plants employ to achieve out-crossing, which mixes genes of two parent plants, resulting in hereditary advantages. While researching this topic I became fascinated with many other ways plant species reproduce, so today I'll touch on a few more of them.

Buzz Pollination

Most of us understand that bees buzz as a result of rapidly beating their wings for flight and communication with other bees. I was surprised to learn that while tomato flowers are designed to self-pollinate, they have greater fertilization success rates when high-buzz-generating insects, like bumblebees, carpenter bees, and some solitary bees visit their flowers. Although about half of bee species can perform "buzz-pollination," honeybees cannot. Buzz-pollinated-flower anthers are tubular and lined with pollen, requiring the pollinator to vigorously vibrate its wings to dislodge pollen through pores in the anther wall.

Buzz-pollination is beneficial for both plant and insect. Pollen of these plants is basically inaccessible to other insects. And since pollen is a vital nutrient for bees, these plants offer a reliable source for these particular insects. Plants benefit because they don't have to expend much energy producing insect-luring nectar, and the prospects of pollination is maximized. While this method does not achieve out-crossing, it is a method of sexual reproduction, called "selfing", and genes are mixed, although to a lesser degree than cross-pollination.

Butterfly Pollination

Butterflies can readily detect colors better than us, and their sense of taste is astounding, due to chemoreceptors on their feet, antennae, and proboscises. Knowing this, we can see why butterflies are drawn to flowers with a variety of scents and colors: zinnias, lavenders, asters, mints and vervains. In my neck of the woods, butterflies gorge on Penstemon nectar and other native perennials and shrubs.

Fly Pollination

Through natural selection, many fly species have evolved to mimic bees to avoid predation. Serendipitous for plants, animals and humans alike, many flies are exceptional pollinators. They are typically drawn to light-colored inflorescences bearing small flowers, sometimes with translucent flecks. But unlike bees, they don't utilize ultraviolet coloration as guides. Syrphid flies, often called flower flies, are some of the first spring pollinators showing up on my flowering plants, including our fruit trees. Syrphids frequent around 70% of worldwide food crops and wildflowers.

Exhibiting coarse, bristly hairs, Tachinid flies can be exceptionally ugly. Those ghastly hairs, however, make great pollen carriers, and Tachinids distribute pollen to a wide range of flowers offering easy access to nectar and pollen. There are over 1,300 species of Tachinids in North America. Tachinid fly larvae parasitize a number of crop-destructive caterpillars including sawfly larvae, cutworms, and cabbage worms.

Expert bumblebee mimics, Bombyliidae flies, or bee-flies, sport extra-long proboscises (not stingers) to probe deep into flowers for nectar and pollen while hovering. I find picture-winged bee flies (*Exoprosopa* sp.) to be quite attractive, their wings ornamented with amber-and brown-stained glass-like patterns and furry bodies.

Here's a fascinating fact—the friction created when a bee or bee-fly flies gives the insect a slight positive electrical charge. Pollen has a slight negative charge, causing its attraction to the insect!

Bird pollination

We've all witnessed the precision flying, forwards and backwards, of a hummingbird honing in on a tubular flower to lap up high-energy nectar. Doubtless, you know how a hummingbird inadvertently cross-pollinates a flower with pollen of a previously-visited flower adhering to the bird's head and beak. But did you know that, in other countries, sunbirds, honeycreepers, spider hunters, and other birds cross-pollinate plants in a similar manner? Most birds possess keen eyesight but a poor sense of smell, so they are attracted to flowers that open during the day, display retracted petals, and carry a bounty of nectar, regardless of the flowers' fragrance.

Bat pollination

Bats pollinate mangoes, bananas, guavas and many more fruits. Possessing a well-developed sense of smell, they fertilize fragrant, pale or white night-blooming flowers. But they're not into fruit simply for nectar; they also consume flower parts and the insects within.

To entice these awesome pollinators to your garden and landscape, merely plant a variety of flowering trees, shrubs, perennials, and annuals in an assortment of colors, shapes and sizes. As an added bonus, plant them in clusters and include natives. Find out for yourself the beauty and power of pollination collaborations.