Beetles: The Garden's Hidden Heroes

by Danae Wolfe

Beetles are among the most abundant and diverse creatures in our gardens. With over 400,000 known species, they make up about 40 percent of all insect species and 25 percent of all known animal species in the world. Belonging to the insect order Coleoptera, which means "sheathed wings" in Greek, beetles have characteristic hard forewings called elytra that protect their delicate hindwings. When not in use, hindwings are often folded like intricate origami under their elytra.

For home gardeners, beetles can be both friend and foe. Many species are beneficial, aiding in ecosystem services like pollination and nutrient cycling, while other species cause extensive damage to plants. Nevertheless, it's worth taking a closer look at this diverse insect group and appreciating all their hard work in keeping our gardens a place of beauty and wonder.

HOLD THE PESTICIDES

Beetle predation is an important part of the garden ecosystem, helping to maintain balance between predators and prey, and reducing the need for chemical pesticides. **Lady beetles**, also known as ladybugs or ladybird beetles, are perhaps the most well-known predatory beetles, and are beloved by home gardeners for their ability to control aphid populations by consuming hundreds of the small insects per day. And lady beetles aren't the only voracious eaters.

Tiger beetles are fast and agile daytime predators that hunt other insects on the ground. These beetles are known for their distinctive metallic colors and their ability to run at incredibly high speeds, making them formidable predators in the garden. When the sun sets and tiger beetles retire, **ground beetles** emerge under cover of darkness to take the nightshift in hunting a variety of pests including slugs and snails.

RECYCLING ORGANIC WASTE

I've heard many a person wish for a world without insects, but such a world would be very unpleasant. For starters, we'd be drowning in rotting organic matter. Insects like beetles play an important role in keeping our gardens fresh through decomposition.

Dung beetles in particular make good use of cow waste. They roll dung into balls and bury it underground. Here, they'll lay eggs and, once hatched, larvae will feed on the waste. This process saves farmers hundreds of millions of dollars each year by increasing forage, recycling nitrogen, and reducing the number of parasites and flies that would otherwise be attracted to the feces. The work of dung beetles also helps to reduce methane, a greenhouse gas, produced by decomposing animal waste.

While dung beetles focus on waste, the **American burying beetle**, a federally threatened insect, plays a crucial role in helping to decompose animal carcasses. Known for their distinctive black and orange coloring, American burying beetles can bury carcasses that are many times larger than their own body. As they feed on the decaying flesh, the beetles break down the carcass and return nutrients to the soil.

This lady beetle is folding its wings beneath the protective cover of its elytra.

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POLLINATION SERVICES

Bees might monopolize much of the pollinator spotlight, but fossil records show that beetles (along with flies) were among our first pollinating insects. Often called messy pollinators due to their clumsiness and habit of chewing through leaves and petals, beetles evolved to pollinate specific types of

Red-necked false blister beetles are well-known pollinators of early-blooming trout lilies.

flowers. They are especially attracted to plants that produce bowl-shaped blossoms with strongly fruity odors and exposed reproductive parts. This helps to explain the ancient relationship between beetles and magnolias, one of Earth's oldest flowering plants.

In order to protect themselves from damage caused by beetle mandibles during pollen feeding, magnolia flowers evolved robust carpels, the female reproductive organs of flowers. These carpels mimic the appearance of stamens—the male reproductive organs of flowers that produce pollen—tricking beetles into spending more time on the flower, and increasing the likelihood of successful pollination.

Most beetle pollinators are not specialized in their floral choices. However, many boast morphological characteristics that aid in pollen transfer as the insects move from flower to flower feeding on pollen. Some beetles are covered in hair, while others have modified mandibles with bristles that help them collect pollen.

A FEW COMMON PESTS

As incredible as beetles are for the services they provide in our gardens, it would be an incomplete picture not to mention the damage these insects can cause. A few species in particular are notorious for their feeding habits and ability to wreak havoc in our food and flower gardens.

Among the most notorious and widespread beetle pest is the **Japanese beetle**. These metallic green beetles feed voraciously on the foliage of a wide range of plants, including roses, fruit trees, and vegetables. Their appetites can skeletonize leaves and weaken plants, making them more susceptible to diseases and other pests.

Cucumber beetles, with their distinctive yellow and black or black and green markings, feed on cucumbers, melons, and other cucurbits, and they can transmit diseases, such as bacterial wilt. These beetles can also impede pollination by feeding on pollen and pollen-producing parts of plants. Similarly, **Colorado potato beetles** target potato plants, as well as other members of the nightshade family like tomatoes and eggplants. The larvae of these beetles can defoliate plants and significantly reduce yields.

Managing beetle pests in the home garden requires a combination of preventive measures and control for established populations. Techniques like crop rotation, proper sanitation, and companion planting can help prevent beetles from establishing. Manual methods like handpicking can also be effective for insects like Japanese beetles.

If you find yourself with a Japanese beetle problem (and who hasn't?), avoid using lure traps, which are designed to attract and trap beetles using pheromones. Studies show that using these traps leads to increased plant damage by inviting more beetles to your garden. Traps only capture around 75 percent of the insects that they attract, so the rest will be free to snack on your prized plants!

Beneficial or pest, beetles are all around us. Learning more about them helps us better appreciate the natural world found in our gardens. ■

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Though cucumber beetles prefer plants in the cucurbit family, they will also happily feed on a variety of flowering plants.

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