

Why Wasps Deserve More Praise

by Danae Wolfe

AH, SUMMER. The season of sunshine, warmth, and... wasps. From summertime picnics to orchard apple picking, wasps seem to always linger near our favorite outdoor activities. But despite their decidedly bad reputation, these diverse insects offer many ecosystem and garden benefits.

IS IT A BEE OR WASP?

Gardeners sometimes struggle to differentiate between bees and wasps. There's a reason for the resemblance! Wasps belong to the order Hymenoptera, which also includes bees and ants. Bees actually arose from early carnivorous wasps during the mid-Cretaceous period when flowering plants began to first emerge, enticing some wasps to shift towards a vegetarian diet.

Like bees, wasps have two pairs of transparent wings, two antennae, and three main body segments—the head, thorax, and abdomen. But where bees are round and hairy, wasps are more slender and generally smooth and shiny, often lacking the hairs that make bees such efficient pollinators.

Wasps are broadly divided into two groups: social and solitary. Social wasps include paper wasps, hornets, and yellowjackets. These communal nest-building wasps practice eusociality, a behavior defined by cooperative juvenile care, overlapping generations within a single colony, and reproductive division of labor. Social wasps aggressively defend their colony. Venture too close to a nest and you might be met with some unhappy vespid.

Unlike their social counterparts, solitary wasps lack social organization. These lone wolves of the wasp world represent the vast majority of wasp species and, because they build individual nests and have no colony to protect, are less likely to be aggressive towards humans. Instead, female solitary wasps primarily use their



The stinkbug hunter sand wasp provisions her nest with a variety of prey, but her preferred choice is the brown marmorated stink bug, an invasive insect in the United States.

stingers to paralyze prey before bringing it back to the nest for their larvae to eat.

WASPS AS POLLINATORS

Adult wasps feed on sugars including flower pollen and nectar. They may also

visit blooms while searching for insect or spider prey to bring back to the nest for developing juveniles. While visiting flowers, wasps can pick up and transport pollen from one blossom to another in a process called incidental pollination. Wasp pollination is not quite as important as bee pollination, but the incidental pollination wasps provide is still a great benefit for the garden.

Pollination might not be wasps' superpower, but what they lack in pollen transfer skills, they make up for in predation and parasitism.

A WORD ON WASP STINGS

Since stingers are a modification of the ovipositor, an egg-laying organ in insects and some other animals, only female wasps and bees are capable of stinging. You're more likely to be stung by a social wasp (like a paper wasp, yellowjacket, or hornet) since these communal wasps are aggressively protective of their nest when disturbed. Solitary wasps, while capable of stinging humans, primarily use their stingers to paralyze prey. Because wasps retain their stingers (unlike honey bees) they may sting multiple times, so tread lightly and be aware of possible nesting sites.

—D.W.

WASPS AS PREDATORS

Unlike adults, most wasp larvae are carnivorous, feeding on insects and spiders that females catch and bring back to the nest. Social wasps generally feed their young bits and pieces of insects and spiders while some species of solitary wasps, like spider wasps, sting and paralyze their prey before bringing it back to the nest whole. Paralyzing prey and keeping it intact ensures that it remains



A parasitoid wasp (*Anastatus semiflavus*) oviposits her eggs in an assassin bug egg. When the eggs hatch, the wasp larvae will consume the assassin bug larvae.

alive and fresh, ready to be eaten when the wasp larvae hatch.

Wasp predation is as remarkable as it is helpful. The stinkbug hunter (*Bicyrtes quadrifasciatus*), a type of sand wasp, is a solitary wasp whose prey of choice is the brown marmorated stink bug (BMSB), an invasive insect in the United States. The stinkbug hunter provisions her nest with several paralyzed BMSB before laying an egg in her sandy burrow and sealing the entrance. When the egg hatches, the larvae will feed on the stinkbugs that its mother provisioned. As BMSB is an agricultural pest, causing tens of millions of dollars in crop loss each year, predators like the sand wasp offer important biological control.

WASPS AS PARASITIDS

Like predation, wasps also provide biological control in the form of parasitism. Parasitoid wasps lay their eggs on or in the bodies of other arthropods. Depending on the species, these wasps may use the egg, larvae, pupa, or adults of insects and spiders as their host. Fascinatingly, entomologists estimate that nearly every species of holometabolous insect (those that undergo complete metamorphosis) is attacked by at least one hymenopteran parasitoid. Unfortunately, parasitoid wasps are vastly under-researched.

Currently, Coleoptera, the beetle family, boasts the greatest number of insect species identified. Some researchers challenge the assumption that beetles are

the most diverse insect order. In the article, “Quantifying the unquantifiable: why Hymenoptera, not Coleoptera, is the most speciose animal order” published in July 2018 by *BMC Ecology*, researchers suggest that hymenoptera might very well contain the greatest number of species thanks in large part to the massively diverse parasitoid wasps. As with most of entomology, more research is needed to study and understand the lives of our six-legged neighbors. Thankfully, with tools like BugGuide and iNaturalist, gardeners are afforded with increasing opportunities to help researchers explore and study the many interactions of backyard bugs.

BE A FRIEND TO WASPS

Support wasps in the garden by planting a variety of blooming plants that provide nectar sources for adult wasps while



While social-nesting paper wasps have a reputation for being aggressive, they are unlikely to attack when nectaring.

Resources

Attracting Native Pollinators: The Xerces Society Guide, Protecting North America’s Bees and Butterflies by The Xerces Society. Storey Publishing, LLC, 2011.

Wasps: The Astonishing Diversity of a Misunderstood Insect by Eric Eaton. Princeton University Press, 2021.

Wasps: Their Biology, Diversity, and Role as Beneficial Insects and Pollinators of Native Plants by Heather N. Holm. Pollination Press LLC, 2021.

supporting the prey that wasps feed their young. Leave bare soil or sand in less-trafficked areas of your home landscape to support solitary, ground-nesting wasps and leave plant stems with soft, pithy centers to support cavity-nesters. Creating pesticide-free areas of your landscape will also provide safe habitats for wasps and many more beneficial bugs.

Discourage wasps from nesting in high-trafficked areas by plugging holes in the façade of your home or other landscape structures (like lamp posts). Also be sure to seal waste bins and don’t leave food waste—including rotting fruit if you grow fruit trees—where wasps can scavenge. Consider planting vegetation in bare spots to prevent ground-nesting species like yellowjackets. Preventing wasp problems is ideal, but if you do find yourself in need of help, contact your local Extension office for guidance on how (and when) to safely manage nesting wasps in undesired locations.

Wasps have long been targeted as pests in the home landscape but like the bees, butterflies, and other beneficial bugs we welcome into our gardens, we should appreciate—even celebrate—the many roles wasps play. Coexistence with wasps, built on a foundation of respect and understanding, should be a goal of gardeners. 🐝

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