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Getting to Know Common Wasps

Throughout the summer you may encounter many different types of wasps. These wasps can look similar at first glance but they often have very different natural histories and behaviors. While one wasp species might be aggressive and sting, another may be more interested in the food you're serving at your family picnic or the juicy spiders in your garden. The following descriptions are intended to help landscape professionals and gardeners identify a few common wasps and determine whether they require control or may be neutral or beneficial in your shared space.

Yellow Jackets, Hornets, Paper Wasps and Potter Wasps (Vespidae)

While adult **eastern yellowjackets** (*Vespula maculifrons*) feed on nectar and other sweet foods, they seek out protein rich foods to feed their grub-like young. They may carry insects or bits of meat from a picnic or trashcan back to their nests to feed their young. The nests are constructed underground and may house as many as 2000 individuals. Like honey bees, yellowjackets are social and their nests house queens, workers and drones (males).

Early in the season these insects may not be aggressive, but as the season progresses and food sources become less

available, yellowjackets may become persistent in their search for food and sting more easily. Their stings are painful and can be life-threatening for people with wasp or bee allergies. These and other yellowjacket species may need to be controlled if they nest in a high traffic area, a location where work needs to be done, or a location where children play. Wasps and bees are active during the day, so if nest control is needed, an insecticide labeled for wasps should be applied at night.

Northern paper wasps (*Polistes fuscatus*) are a species you might recognize as the wasps that build a nest under overhangs or near outdoor lights on homes. Their nests are sometimes called "umbrella nests" because they often have a curved top with open comb-like cells on the underside. The nests are built in the spring by a few females but after a queen is established, the nest may grow to house as many as 200 individuals.

Northern paper wasps forage for protein rich food like insects and bits of carrion, as well as sweet foods like nectar and fruit. Northern paper wasps are usually docile but may become aggressive if their nest is disturbed. Like eastern yellowjackets, they can be controlled if they become a risk to people in the area and should be controlled at night.

Potter wasps (*Eumenes fraternus*) are solitary in nature. Each female builds a

marble sized mud urn to house one or multiple offspring. The nests may be built on plants or on the sides of homes. The adult collects insect larvae or spiders and puts them inside the mud nest before laying one or more eggs and sealing the chamber. The young will hatch and feed on the stored food items until they emerge from the nest as adults. The adults feed on nectar from flowers. These wasps rarely sting people and may help remove caterpillars in the area.

Thread-waisted Wasps (Sphecidae)

Black and yellow mud daubers (*Sceliphron caementarium*) are solitary wasps about 1 inch long. These wasps usually have an elongated and very slender attachment point between their abdomen and thorax. Nests are constructed using small amounts of mud carried from puddles or other bodies of water and situated in sheltered locations, including porches and building overhangs. These wasps are behaviorally similar to potter wasps, preying upon insects and spiders, then storing and sealing them in their nests for their developing young. The adult wasps feed on the nectar of flowers like Queen Anne's lace and rarely sting people.

Cicada killers (*Sphecius speciosus*) are large wasps, about 2 inches long, with red-brown heads, black bodies and yellow banding on their abdomens. Females sting and paralyze cicadas, which they carry back to their subterranean burrow to feed their young. Females may sting people but this typically only occurs if someone attempts to handle them or if they are stepped on.

These animals are sometimes confused with Asian hornets because of their

large size, but they are a native species that rarely sting humans. Asian hornets are not established in North America. For more information about cicada killers, please refer to Issue 11 of the Home, Yard & Garden Pest Newsletter.

Spider Wasps (Pompilidae)

Spider wasps vary in size but most are about ½ inch long. They are usually black, but may have a bluish shine, with transparent wings. Wasps in this group stun spiders with a venomous sting and are protected from the spider's bite by their hard exoskeleton. After stunning the spider, the wasp will carry it back to her burrow or mud cell to feed her single offspring. Adult wasps feed on the nectar of flowers or honeydew produced by aphids. Spider wasps are not aggressive but may sting if they are threatened or handled. Spider wasp species in Illinois can have a mildly painful sting, though some species native to the Southwest (tarantula hawks) can produce a very painful sting. Give these insects a respectful distance if you are vacationing in the Southwest.

Parasitoid Wasps (multiple families)

Parasitoid wasps feed and develop on other insects, making them beneficial to landscapers and gardeners. The images above show a tomato hornworm (left) that has been parasitized by braconid wasps (similar species shown right). These wasps lay their eggs in the caterpillars. As the young develop inside the caterpillars, the caterpillars will slow or stop feeding on the plants. When the young larvae mature, they will pupate in tiny cocoons on the surface of the parasitized caterpillars (pictured left). These tiny cocoons are a good indi-

cation that these beneficial insects are making your garden their home. When they emerge as adult wasps, they will feed on the pollen, nectar of flowers or honeydew from aphids, then seek out a new caterpillar host for their own young. Parasitoid wasps do not sting people the way a hornet or bee might. If you find a parasitized caterpillar, the best thing to do is leave it undisturbed so the wasps can reproduce and consume more pest caterpillars. (*Sarah Hughson*)

Do Not Let Weeds Go to Seed

It is late in the growing season. Many plants (and gardeners including myself) are running out of speed and ambition. I have heard a few say that they are tired of what has been blooming all summer and they are ready for a change or ready for the cold weather to hit. This growing season may be coming to a close, but I can assure you that many weeds are still happily growing.

Remain diligent in your weed control efforts. With the cooler temperatures we had recently, came a new flush of cool-season weeds. I am seeing a fair amount of common chickweed and henbit seedlings. Additionally, I am seeing quite a bit of dandelion growth, with much of it being seedlings.

This time of year is also when the summer annuals such as prostrate spurge, common purslane, and prostrate knotweed reach maturity and become quite noticeable in the landscape. The days are getting shorter which affects the amount of time we are able to spend gardening. You may be weary of battling weeds, but I encourage you to keep

up the good fight. Do NOT let these weeds remain onsite. They have likely flowered or produced seed. Take the time to remove them carefully to prevent further seed dissemination. You may recall the old saying, "One year's seeding makes seven years' weeding." I don't know who the poor misguided soul was who penned this, but I can tell you that it is a lot longer than seven.

According to Michigan State University Extension Bulletin E-2931, 'Integrated Weed Management "One Year's Seeding..."', seeds of various weed species persist in the soil for different lengths of time. Once weed seeds are produced and dispersed, they can either germinate and emerge, germinate and die, lie dormant, become non-viable, decay, be eaten, or be removed by wind and water.

The problem of course for us is the seeds that lie dormant. For those, germination could occur the following year or many years from now. Research has been done on many common weed species to determine their persistence in the soil seedbank. The years required for a 99% reduction in seed number is fairly small for giant ragweed and common sunflower at only two years. However, velvetleaf and common lambsquarters seeds take much longer to see this same reduction at 56 and 78 years, respectively. Even a 50% reduction for common lambsquarters would still take 12 years. And we aren't talking about a few seeds either. These species are abundant producers of seed. One common lambsquarters plant can produce 72,500, while one velvetleaf can produce 7,800.

So, if we let down our guard in the garden to head inside for pumpkin spice anything, and a single velvetleaf plant

goes to seed, we can be left with a whopping 3,900 seeds in the soil 12 years down the road, and we can still be battling the offspring of that plant 50 years later.

My intent is not to scare you back into the garden. I know you are tired. This is merely a reminder of what weeds are capable of. File this under "know thy enemy." Remain steadfast in your weed control efforts. This time of year, hand weeding can be done, mulch can be added, preemergent applications can be made to prevent germination of winter annual weeds. (*Michelle Wiesbrook*)

Tar Spots of Maple

Tar spots have been evident on many species of maple. The disease has been especially widespread in the northern portion of the state. Several different fungi in the genus *Rhytisma* cause this disease. Tar spot results in raised, black spots on the upper surfaces of affected leaves. The symptoms are distinct, allowing for easy field diagnosis.

The first symptoms appear in mid-June as small, pale yellow spots. By mid-July, the yellow spots expand and a thick, raised, black stromata starts to form within the spot. By late summer, affected leaves appear as if they splattered with black paint or tar, hence the name tar spot. When severe, the disease may cause some premature defoliation. Fortunately, the disease rarely affects an established tree's growth and development.

The fungi that cause tar spots overwinter on infected leaf debris. In the spring, overwintering fungal fruiting bodies ripen and eject spores. Wind then car-

ries the spores to nearby developing leaves of susceptible hosts where the infection occurs.

Tar spot outbreaks are relatively infrequent. Trees that are damaged on an annual basis tend to be located in moist, sheltered sites that provide an ideal environment for the pathogen. Fortunately, injury resulting from tar spot infections is mostly aesthetic and rarely affects the overall health of the tree. The first step in disease management is to rake and destroy leaves in the fall or early spring. This practice will help reduce spores capable of causing new infections. Fungicides applications are rarely warranted. When justified, fungicides containing the active ingredient Mancozeb (Fore 80 WP or Protect DF) or Copper Hydroxide (CuPro 500) can be used to protect newly developing leaves. Begin sprays when the leaf buds are opening and re-apply twice more at 10-day intervals. (*Travis Cleveland*)

Buying the Correct Personal Protective Equipment

Permeation, degradation, and breakthrough time are all specific criteria to consider when searching for Personal Protective Equipment (PPE). Pesticide applicators often work with many different types of pesticide formulations and numerous adjuvants. Routine day-day work tasks result in an increased risk of exposure to these chemicals. To reduce exposure, we need to use personal protective equipment that is compatible with the chemicals that we are applying. Since PPE is made from various materials and manufactured using different processes, it is essential to understand the chemical compatibility of the materials.

- **Permeation rate:** This is a measure of how fast a chemical can go through a material. Thicker materials tend to have slower permeation rates. Permeation rates are reported differently by the various manufacturers, but a higher number generally means a quicker penetration rate.
- **Degradation:** This is the actual physical change to the material caused by the chemical. This includes; swelling, stiffening, wrinkling, changes in color, and other physical deteriorations. The slower the degradation occurs in the presence of a chemical, the more protective the material is for that specific chemical. There is no standardized test for degradation. Each manufacturer uses their own method for analysis.
- **Breakthrough time:** This is the length of time from the point first contact with a chemical on a material to when it can be detected on the opposite side of the material. The longer the breakthrough time, the more protective the material is for that particular chemical. Breakthrough is measured using a standardized test (ASTM F739).

The testing process on most personal protective equipment, like gloves, is usually done with one chemical. This means that when you mix pesticides, your PPE might not be compatible. If you think this might be the case, a quick call to the manufacturer with the label(s) in hand can alleviate that concern.

While many manufacturers may use the similar materials, e.g., nitrile, the final PPE products may not be the same. Each manufacturer may use a specific manufacturing process and therefore may produce PPE with variable characteristics. Be sure to check the compatibility charts from the manufacturer.

A product's resistance to cuts, abrasions, and punctures must also be taken into account as a critical usage factor. A glove with excellent permeation resistance may not be adequate if it tears or punctures easily. Always factor in the physical performance of the job when selecting your PPE. Understanding how materials are made and evaluated will help you make the appropriate choice for protecting you and your employees. *(Maria Turner)*