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STINGING INSECTS

Simple Strategies Manage Stinging Insect Threats

By Jody Gangloff-Kaufmann

Understanding and managing stinging insects is an essential component of recreational safety that is often overlooked until emergencies arise. Stinging insects, including yellow jackets, paper wasps, hornets, fire ants (and some bees), are among the most significant of public health pests. Many people are severely allergic to stinging insect venom. Each year, over 500,000 people enter the emergency room with allergic reactions to venomous insect stings. Up to 150 people die each year. Stinging insects are commonly encountered in the suburban landscape, on or near buildings, in recreational areas, in parks and on golf courses.

Athletic fields, golf courses and parks offer ideal habitats for native and invasive species of wasps that pose a threat to human health.

Like many pests of landscape and turfgrass, stinging insects must be managed for the safety and pleasure of those enjoying recreational areas. A proactive approach, using an integrated pest-management (IPM) strategy, is the best method. This article will focus on common vespid and sphecid wasp pests of recreational grounds and offer tools and ideas for wasp management and prevention.

Athletic fields, golf courses and parks offer ideal habitat for native and invasive species of wasps that pose a threat to human health. Suburban environments are "ecologically disturbed" and may therefore have more pest problems in general. These areas are patchy in composition, with woodlots adjoining fields, ornamental plantings and man-made structures. Together, they provide a variety of habitats in a small area. Suburban environments often contain both natural and man-made resources, such as food and raw materials required for nest making. Most wasps are opportunistic in their choice of nesting areas.

One invasive species is highly successful in surviving in conjunction with human activity, nesting on structures and scavenging in garbage as well as landscapes. Yellow jackets and paper wasps are efficient predators of many common insects considered to be landscape pests, such as cutworms. Protein is their nutritional requirement as young colonies multiply in early summer and can also be scavenged from rubbish and food waste. However, as summer wears on, sugary food sources left behind by humans are a more powerful attractant for hungry wasps.

Parks, golf courses and other recreational areas usually experience a surge in wasp problems in late summer. As a result, abundant and aggressive yellow jackets near the concession stand can repel or, in the worst case, seriously injure the public.

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TABLE 1

Table of characteristics of some common stinging insects.

Species	Common name	Size Color	Colony style	No. of workers
<i>Vespula germanica</i>	German yellow jacket	10-16 mm Yellow/black	Void nest	Can be thousands
<i>V. vulgaris</i>	Common yellow jacket	10-16 mm Yellow/black	Void nest	Can be thousands
<i>V. maculifrons</i>	Eastern yellow jacket	10-16 mm Yellow/black	Void nest	Can be thousands
<i>Polistes dominulus</i>	European paper wasp	16-20 mm Yellow/black	Umbrella	Under 200
<i>P. fuscatus</i>	Common paper wasp	16-20 mm Brown/black	Umbrella	Under 200
<i>Dolichovespula arenaria</i>	Aerial yellow jacket	<15 mm Yellow/black	Enveloped ball, small	Lower than <i>Vespula spp.</i>
<i>D. maculifrons</i>	Baldfaced hornet	15-20+ mm Black/ivory	Enveloped ball, large gray color	100-400
<i>Vespa crabro</i>	European hornet	20-35 mm brown, yellow	Enveloped ball, large brown color	200-1,000
<i>Sphecius speciosus</i>	Cicada killer wasp	25-40 mm brown, black, yellow	Single burrows often in clusters	Solitary
<i>Scolia dubia</i>	Scoliid or digger wasp	20-40 mm black w/ yellow spots	Single eggs laid on scarab grubs	Solitary
<i>Apis mellifera</i>	Honey bee	11-15 mm honey brown	Void nest	20,000- 80,000

Additional problems ensue in and around golf courses and athletic fields. Several varieties of ground-nesting wasps and bees may infest these areas.

Cicada killer wasps, scoliid or digger wasps, and a variety of ground-nesting wasps and bees are a few of the typical inhabitants. Although these insects are relatively less dangerous, they may be highly visible and generate anxiety for players and spectators of an event.

Traditionally, pest managers have taken a simple approach to wasps: Treat them immediately with a pesticide. Since only a small amount of insecticide is usually applied, this method is still widely used.

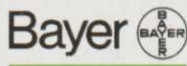
Many practitioners have never required new approaches to wasp management. However, as many municipalities, school districts and other public institutions shift to low-risk pest management policies, old-fashioned common-sense methods and innova-

tive new technologies will become more valuable and widespread.

The importance of sanitation

Among the most important steps to creating a pest-free environment is sanitation. Vespid wasps (which include yellow jackets, paper wasps and hornets), like other public health pests, are scavengers and become a problem in places where human activity occurs outdoors. Simple adjustments to food and garbage handling, combined with other techniques, can alleviate problems with wasps.

Tight-fitting lids or swinging doors should always be secured on trash receptacles. Use a good-quality bag inside that will not break or leak, change bags each time trash is emptied, change trash at sunset (also prevents vertebrate pest problems) or twice a day in early afternoon and at dusk. If the trash cannot be changed frequently, place



QUICK TIP

Scouting is an important component of an effective pre-damage grub control program because of the variation in application timing among grub species. For best results, identify the grub species on your course and treat accordingly.

Digger or scoliid wasps hover in large numbers around grassy areas in search of turfgrass-infesting white grubs.

more receptacles around to prevent overflow. Incorporating these techniques into your current waste-management plan can greatly reduce stinging insect problems.

Large trash receptacles, such as dumpsters, should be placed away from human activity and buildings. When this is not an option, hosing or power washing dumpsters and nearby pavement once or twice a week is effective. A school district on Long Island began washing emptied dumpsters with dilute ammonia water to help cut down residue. The district reported that yellow jacket problems had diminished, although the effect did not last more than a couple of days.

When the staff combined quality trash bags, tight-fitting lids, and trash receptacle cleaning, it was able to manage dumpster wasps without the use of pesticides.

Modify the pests' habitats

The suburban environment offers abundant locations for wasp nesting and advantages such as lower predation, warmth and nearby food sources.

Careful scrutiny of structures, including fences and outdoor objects, will reveal nest sites or entry ways into structural voids. Yellow jackets tend to occupy voids in walls and doorways, in trees, abandoned cars, under railway ties and inside rodent burrows. Paper wasps will use various cavities and tend to build a nest near the entrance.

Open fence pipe ends are favored nest sites for paper wasps. Larger nests will be found underneath or within eaves and under metal flashing. Nests are constructed mainly in locations receiving ample sunlight.

Check for patterns of use by paper wasps. Old and new nests will be found in ideal locations year after year. Following detection and treatment or removal of the nest, elimination of the void or nest area by sealing, filling, or blocking is critical to reducing future problems. Be creative when changing the habitat.

Vinyl siding, hardening foam, screen, paint, caulk and steel wool are some materials that can discourage nest building. Building maintenance is clearly a key component of pest control and some buildings will need minor renovations to alleviate pest problems long term.

Naturally occurring harbors can be more difficult to modify. Rodent burrows will con-

tinue to turn up as long as mice, rats and larger mammals live on the grounds. When an abandoned rodent burrow or one occupied by ground-nesting yellow jackets is located, it should be filled with fine *dry* sand, preferably at night. If occupied by yellow jackets, the process may need to be repeated several times because some yellow jackets will dig their way out.

Hornet nests built close to the ground in sensitive areas should be approached at night, bagged and frozen or treated. When nests appear high in trees, don't bother.

Sandy dry areas that attract cicada killers, such as playgrounds and sand bunkers, can be fitted with hardy landscape cloth buried 4 to 6 inches below the surface. Regular overhead irrigation during the window of cicada killer activity (mid July through late August) will discourage females from burrowing in the area. Since cicada killers prefer bare soil areas, planting turf in bare spots will also reduce their numbers. Cicada killers are beneficial insects that should be managed only when absolutely necessary.

How to trap them

Many styles and brands of wasp traps have been marketed in recent years. Some use wet foods as attractants and others have dry food-based chemical attractants. There is certainly a place for trapping in any wasp management program. Traps have been found to capture yellow jackets and paper wasps in great numbers, along with a smaller number of hornets. They can be used to monitor the types and relative numbers of wasps in an area early in the season and help control wasps later on.

To optimize trapping, find a good location. Sunny places away from the nest are optimal. Choose the best bait for the locality. Try a variety of baits. Beer, grenadine, pineapple or apple juice, and fruit punch have great attraction, as well as the syrup from canned peaches and pears.

Every situation is different and guaranteed to change over time, so the baiting may need adjustment. Baits are especially handy when facing a problem that doesn't originate on the property you own or manage, but won't be effective when an alternate and more attractive food source is nearby.

Combining traps with sanitation makes both strategies more effective.



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The paper-nest building wasps are aggressive defenders of their hives.

Pesticide use

Conventional pesticides used to control stinging insects include carbamates and, more commonly, pyrethroids, in dust and/or aerosol formulations. Aerosols are often applied to hornet and yellow jacket nest openings or directly to paper wasp nests. Dusts are used in voids. Both have residual effects that result in quick reduction or elimination of wasp nests. However, many practitioners are making a conscious effort to find lower-risk solutions.

Botanical sprays, including mint oil and a patented hexa-hydroxyl formulation (derived from plant oils), are among the compounds available to replace traditional sprays in municipal pesticide phaseouts in New York, for example.

A dust formulation of the hexa-hydroxyl product is also exempt from EPA pesticide labeling due to its food-grade ingredients. Approved for stinging insects, it has insecticidal and repellent qualities.

Other products include dust and spray formulations of pyrethrins. Whether lowering pesticide use is the goal or not, pesticides should always be combined with sanitation and habitat modification for more permanent and reliable pest control.

Precision wasp baiting has been tested in places where invasive wasps are wreaking havoc on local ecosystems. The technique may have possibilities in the United States as a way to reduce or eliminate nests from highly sensitive areas.

Biological control, using commonly occurring insect pathogens, is another potential low-toxic solution, though care must be

taken when using generalist insect pathogens so as not to infect non-target organisms. Researchers are investigating the potential of fungi for wasp control.

Educate your patrons

In many cases, nothing can or should be done to completely eliminate wasps. In fact, elimination is an unrealistic goal in most pest management situations. Educational tools can pick up where pest management leaves off, helping the public to understand how they can further lower their risks. The educated customer can be an ally, particularly if he or she supports your efforts to reduce pesticide inputs.

As we attempt to improve pest management and reduce environmental and human health risks from the use of pesticides, we must also weigh the risks posed by certain pests themselves.

Stinging insects can be life threatening to some but may only be a nuisance to others. Managing wasps in a proactive and safe way, an IPM way that integrates various tools, ensures that the needs of many are met and the goals of protecting human health and the environment are also reached.

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