

## Chapter 1

# Wasps and Bees

Considering the great diversity of wasps and bees in the Northeast, only a relatively small number pose risks to humans. One should always consider whether the wasps or bees encountered are problematic, and the tradeoffs of managing versus tolerating the insects. Chapter 2 of this guidebook gives the reader some basic tools for correctly identifying and understanding the species of wasp or bee in question. This chapter reviews wasp and bee management and stings.

### Managing with IPM

When managing pests, always follow the principles of integrated pest management (IPM). IPM is a sustainable approach to controlling pests in ways that minimize negative human health and environmental impacts while also remaining economically feasible. IPM approaches include anticipation and prevention of pest problems and correct pest identification. It may also include cultural, biological, physical, and chemical means of control, using pesticides carefully and only when necessary.

dier, less open cavities with larger interior space.

Aerial yellow jackets usually build aboveground nests on the sides of buildings, inside storage sheds, and in

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**Figure 1.1** European paper wasps nesting in a pipe.

trees and shrubs, but can also build large colonies in small spaces. Some playground equipment is made of hollow logs and chains—be especially aware of wasp activity in these structures. In such a situation aerial yellow jackets will become very aggressive in response to the activity of children and pose a considerable risk to those nearby.

Bald-faced hornet nests, also built on structures, high up in trees, or in shrubs, may be concealed by foliage and not noticed until they are very large. These nests are easily spotted on structures, but one must pay close attention to vine-covered exterior walls, which provide excellent camouflage. Shrubs in areas of concern (such as school or park playgrounds) should be inspected in late June or July for wasp nests.



**Figure 1.9** Foaming a wall void to exclude yellow jackets.

openings that should be sealed up during cold weather.

Do not attempt to seal up active structural nests in occupied buildings from the outside, even if an insecticide was used, because adult wasps will then be forced inside the structure and can present a serious hazard to building occupants. Structural cavities should only be sealed during the winter months to ensure that no live wasps are trapped inside. When sealing entryways, it is preferable to make permanent repairs that exclude pests, such as filling access points with concrete and replacing damaged wood. However, this is not always feasible, so the use of temporary fixes, such as sealing cavities with copper wool and insulation foam, are recommended. Metal flashing on buildings must be pinned down and secured to eliminate spaces for paper wasps to nest. Weep holes can be covered or blocked with copper wool or other barriers that eliminate pest access. See Additional Resources (page 86) for more information.

## IPM Checklist for Wasp and Bee Management (for Buildings and Grounds)

### *Late fall through early spring*

- Recall any wasp and bee activity on or around the building, and eliminate access to nesting sites by sealing openings, repairing flashing, replacing missing bricks, filling rodent burrows, eliminating clutter such as wooden boards, and taking any other prevention steps as needed.

### *Early to late spring*

- Monitor buildings and grounds for wasp and bee activity on a weekly basis, on sunny warm days.

### *Late spring through summer*

- Destroy paper-wasp nests on buildings and in areas close to people using a strong jet of water, a long pole, or a low-risk pesticide product.
- Look for yellow jacket activity, including both colonies on site and foraging workers from colonies off site.

### *Late summer through fall*

- Monitor buildings and grounds for wasp and bee activity on a weekly basis, on sunny warm days, and take action as necessary.
- If needed, use traps baited with orange soda or fruit punch to capture wasps in sensitive areas (playgrounds, for example).
- If yellow jacket activity is high, do a thorough search for a colony on site.

## Chapter 2

# Common Wasps and Bees of the Northeastern United States

**W**asps and bees are part of a large group of insects, called the Order Hymenoptera, which represents some of the most highly advanced insects on earth, including ants. Wasps and bees are fascinating and complex in their structure, behavior, and ecological roles. They are considered among the most beneficial groups of insects from the human perspective, serving as pollinators of one-third of

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**Figure 2.1** A bumble bee collecting nectar and pollinating.

## Eastern Yellow Jacket

*Vespa maculifrons*

Large-Colony Scavenger/Predator Yellow Jacket

S.B. Jacobs



**Figure 2.13** Eastern yellow jacket worker.

### Worker Size

½ inch (14 mm)

### Colony size

Up to 2,000 – 3,000 workers in the northeastern US, greater in the South

### Colony locations

Subterranean, wood piles, compost bins, and various other cavities

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The geographic range of the native eastern yellow jacket covers the entire eastern half of the United States to the Rocky Mountains. Colony size and duration are greater in the southern climate. In the Northeast, colonies are initiated in May or June and peak in late August or early September. Although the eastern yellow jacket is a primary pest in the Northeast, there is evidence that the German yellow jacket may be replacing it as the most important pest species. Both wasps occupy similar types of nesting cavities. Colonies are typically found below ground in yards, hardwood forests, creek banks, roadsides, rotting stumps, walls, leaf and compost piles, and other natural and man-made cavities. The comb is wrapped in a fragile tan-brown paper envelope. The eastern yellow jacket is a predator and scavenger for protein for developing larvae, but adults will also consume nectar and fruit juices.

## Paper Wasps

Several species—*Polistes* spp.

**Worker Size**  $\frac{3}{4}$  –  $\frac{7}{8}$  inch (19 – 22 mm)

**Colony size** A few dozen to as many as 100 wasps

**Colony locations** Aerial or in structural shelters and cavities

### European paper wasp

*Polistes dominulus*

G. Alpert



**Figure 2.24** European paper wasps on the comb.

### Northern paper wasp

*P. fuscatus*

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**Figure 2.25** A Northern paper wasp.

Common paper wasps of the genus *Polistes* are often called “umbrella wasps” for the style of the nests. Each nest is made of a single-layered paper comb that is exposed, not enclosed in an envelope, although combs may be built in protected cavities. Nest locations include roof eaves; under railings, flashing, and wooden seating; in metal structures, such as fence pipes, playground equipment, undisturbed lawn equipment, and car engine compartments; as well as in shrubs. Paper wasps will also build nests sideways on vertical surfaces. They may construct colonies inside bird nesting boxes and kill hatchling birds. Paper wasps are as likely to become alarmed and sting as yellow jackets, but the

number of individuals per colony is much lower. However, all members will defend the colony vigorously if disturbed. These

## Carpenter Bee

*Xylocopa virginica*

T. DeTertizi



**Figure 2.38** A carpenter bee female.

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**Figure 2.39** Carpenter bee galleries in structural wood.

### Worker Size

$\frac{3}{4}$  – 1 inch (21 – 26 mm)

### Colony size

Solitary, but several may occupy the same area

### Colony locations

Sound wood, fascia boards, exposed heartwood of trees, structural wood

Carpenter bees are often mistaken for large bumble bees, but they are different in many ways. The most common pest species in the Northeast, the eastern carpenter bee (*Xylocopa virginica*) has yellow hair with a shiny black bald spot on the thorax, and a black, mostly hairless abdomen. Unlike bumble bees, carpenter bees are solitary insects that bore tunnels into the wood of trees or structures to create long galleries for egg laying and raising brood. They can inflict damage to

a wood structure through years of excavating tunnels. Wood may become weakened and susceptible to fungal rot. Although carpenter bees may appear aggressive, most people encounter



## Ground-Nesting Bees

Many species

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### Worker Size

$\frac{1}{8}$  –  $\frac{3}{4}$  inch (4 – 20 mm)

### Colony size

Solitary, but communal (many will occupy the same area)

### Colony locations

Subterranean



**Figure 2.49** A ground-nesting or plasterer bee in her burrow. (Close-up above.)

Many species of solitary ground-nesting bees can be found in sunny, dry, and sandy areas of parks, golf courses, and other open spaces. They may also occupy shadier sites with loose, well-drained soil with little vegetation. Plasterer bees are one type commonly seen in urban-suburban landscapes and are sometimes considered pests. These bees tend to aggregate nests as though they are part of a large colony; however, they ac-

## Appendix: Quick identification of wasps and bees and sting risk level (continued)

Type	Physical description	Nest type and location	Risk level
<b>European hornet</b> <i>Vespa crabro</i>	Gold and brown/black, some hairs, 1 – 1½ inches	Multilevel paper combs in ovoid-shaped, red-brown envelope; in abandoned structures or hollow trees.	High if colony is disturbed
<b>Honey bee</b> <i>Apis mellifera</i>	Gold, orange, and brown, fuzzy or hairy, ½ inch	Large social colonies in natural or man-made cavities.	Medium
<b>Bumble bee</b> <i>Bombus</i> species	Yellow to orange and black or all black, fuzzy or hairy; up to 1 inch	Small social colonies in natural or man-made cavities.	Medium
<b>Cicada killer wasp</b> <i>Sphecius speciosus</i>	Large (almost 2 inches); black and yellow with brown stripes; female larger than male	Solitary; males guard nest holes, females dig holes in sandy or well-drained soils with little ground cover, sunny locations.	Low, but perceived to be dangerous
<b>Ground-nesting bee</b> Many species	Variable black and yellow to orange or metallic, usually with hairy bodies; various sizes from ⅛ to ¾ inch	Solitary, but found in groups; nests are holes in sandy or well-drained soils with little ground cover, sunny locations.	Low, but perceived to be dangerous