Honey Bee Control & Removal

A Georgia Pest Control Certification Manual

HONEY BEE CONTROL & REMOVAL

A GEORGIA PEST CONTROL CERTIFICATION MANUAL

CONTRIBUTORS

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ACKNOWLEDGMENTS

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CHAPTER 1: INTRODUCTION, RULES AND REGULATIONS

The rules of the Georgia Structural Pest Control Act were amended in 2021 to address a specialty in the pest management industry. Prior to the rule, honey bee removal from a structure required a household pest control license. The Georgia Structural Pest Control Commission (SPCC) and the Georgia Department of Agriculture (GDA) responded by amending the regulation to provide regulatory reform that lessens the burden on honey bee removal operators while improving and maintaining necessary consumer protection.

The rule only applies to the professional control and removal of an established honey bee colony in a structure and

- protects consumers by establishing a minimum competency standard for honey bee removal operators and a state issued certification license, supports honey bee conservation and promotes honey bee removal and relocation without killing the colony,
- supports agriculture for the production of honey, other hive products, and the pollination of crops,
- supports the profession of honey bee control and removal by creating a state certification process and minimum standards for a removal service.

Companies and operators working in the State of Georgia that provide the service of honey bee control and removal (HBR) from a structure must be certified and licensed by the compliance date of January 1, 2023. The rule establishes minimum competency training standards and a state certification. The revision to the rule strengthens the baseline of knowledge for all HBR operators.

The purpose of this training manual is to provide material for people interested in becoming Certified Honey Bee Control and Removal Operators in the State of Georgia. It covers the basic knowledge and skills required to safely, effectively and correctly remove an established honey bee colony from a structure.

The public demands professionalism from service providers including honey bee control and removal operators as members of the pest management profession. Services provided by a Certified Honey Bee Control and Removal Operator include but are not limited to:

- Inspections of reported and potential honey bee pest infestations,
- Recommendations on management options, types of interventions, and procedures,
- Honey bee control and removal without the use of pesticides.

The Georgia Structural Pest Control Commission (SPCC), with the support of the professional pest management industry, University of Georgia and Georgia Beekeepers Association, developed the Honey Bee Control and Removal certification program. This program requires all Honey Bee Control and Removal Operators that make inspections, propose interventions and remove established honey bee colonies from structures to meet certain requirements.

This manual is intended to help the prospective Honey Bee Control and Removal Operator prepare for the certification examination in addition to serving as a future reference guide. The pest management community is an essential part of today's society that helps protect citizens and their possessions from damage and disease caused by pests. You can be proud to be part of this important profession by reading, understanding, and implementing the regulatory and knowledge requirements as well as the practical approaches outlined in this manual.

RULES AND REGULATIONS

Licensing

Any person engaging in honey bee control and removal must:

- Be certified in Honey Bee Control & Removal which includes an approved pre-examination training, experience and passing a state certification examination.
- Hold a structural pest control company license and provide verification of minimum liability insurance and renew as required.
- Maintain certification by meeting the recertification training requirement and submitting renewal fees as required.

Certification

The Certified Honey Bee Removal applicant must complete an application form, submit it to the SPCC along with verification of completing the eight (8) hours of classroom training approved by the Commission, participate in a minimum of three honey bee removal jobs, score at least seventy percent on the state examination covering the aforementioned training, and pay an Operator Certification Fee.

- Pre-examination training requirement includes 8 hours of training approved by the SPCC and provided by an approved trainer. The training includes the following areas:
  - State and Federal laws and regulations on Honey Bee Control,
  - Honey bee identification and types of live honey bee removals (cut-out, trap-out, and swarm removal) including basic removal techniques,
  - Determining if there is an established honey bee colony, and how to locate a colony living inside of a structure,
  - Proper cut-out removal techniques including basic construction knowledge, recommended tools, finding and caging the queen, preventing future infestations, saving comb and hiving the bees,
  - Trap-out techniques and negative consequences of leaving honeycomb, honey pollen and brood inside a structure,
  - Eradication vs. Relocation including common insecticides/pesticides applied to honey bees by property owners and PMPs,
  - Potential safety hazards.
- Experience participating in a minimum of 3 honey bee removal jobs
- Examination

Recertification

The Honey Bee Control and Removal Operator Certification must be recertified every 5 years from the date the Operator was last certified. Recertification of the Certified Honey Bee Control and Removal Operator license includes completion of at least five hours of SPCC-approved Honey Bee Removal trainings including attendance at approved workshops, seminars, short course or training programs. These training programs will include new information and subject matter necessary to ensure continued competence. Recertification also can involve completion of the requirements for obtaining the initial Certification, including eight hours of initial training and passing a written examination.

Renewal

All certifications and company licenses expire on June 30th of each odd numbered year. The renewal application and fee are required to be submitted prior to the expiration date.

Operating

Certified Honey Bee Control and Removal Operators are trained and knowledgeable on the equipment needed for remediating structures, regardless of construction, and committed to removing honey bee colonies without the use of pesticides.

Honey Bee Control and Removal services can be advertised under the licensed company name only. All service vehicles must have the complete licensed name on the vehicle with a minimum of 2-inch lettering. Each service must meet the minimum requirements for control and removal. The service must be sold and provided by a certified Honey Bee Control and Removal Operator or someone under their direct supervision. The use of any pesticide for the control of honey bees is prohibited unless the operator holds a household pest control license.

Requirements for control and removal

- The removal job must include the removal of the honey bees, wax comb, honey, brood and other associated material and debris from the structure except for trap-out jobs.
- The job must include the sealing of all possible reentry points.

Recordkeeping

A contract must be issued for every removal job before the work begins. Copies of all contracts and supporting documentation must be kept for two years following the expiration of the contract.

The contract must:

- include the effective date and contract period.
- include the price of removal.
- include the scope of work and type of removal service.
- include the insurance requirement statement.
- be issued in accordance with rule of the Federal Trade Commission including disclosure of the 3-day right of cancellation.

Contracts for trap-out honey bee removal jobs must also contain the following statement: "This job will only remove honey bees. The wax comb, honey, brood, and other associated material will remain in the structure and may result in re-infestation and secondary pest issues."

Household pest control

The control and removal of other pests such as bees, wasps and hornets are not included under a honeybee control and removal license. To control structural pests other than honey bees and wood-destroying organisms, the operator must be certified and licensed in Household Pest Control. This is a broad operational category in Structural Pest Control that includes the making of inspections, the identification of pest infestations, the application of a pesticide, and the use of mechanical devices or structural modifications for the purpose of preventing, controlling or eradicating pests in household structures, commercial buildings and other structures, including adjacent outside areas.

Enforcement

It is a violation of the Georgia Structural Pest Control Act to provide this service without a license. Engaging in this business without a license is a misdemeanor for the first offense and/or liable for a civil penalty of not more than $10,000 per violation. Any Operator accused of a violation has the right to ask for a hearing.

GEORGIA STRUCTURAL PEST CONTROL ACT OF 1955

The Georgia Department of Agriculture and the Georgia Structural Pest Control Commission administer the Structural Pest Control Act (SPCA):

http://agr.georgia.gov/Data/Sites/1/media/ag_plantindustry/structural_pest_control/files/gaspcactamended2003.pdf.

The SPCA is the primary law for the pest management industry in Georgia. The Department of Agriculture is the enforcement agency for the SPCA.

RULES OF THE GEORGIA STRUCTURAL PEST CONTROL COMMISSION

Under the SPCA, the Georgia Structural Pest Control Commission makes rules and regulations as may be necessary to protect the interest, health, and safety of the public and ensure the efficiency of licenses and operators.

http://agr.georgia.gov/Data/Sites/1/media/ag_plantindustry/structural_pest_control/files/Rules-of-the-Georgia-Structural-Pest-Control-Commission-Effective-July-1-2021.pdf

OCCUPATIONAL SAFETY AND HEALTH ACT

The Occupational Safety and Health Administration (OSHA) in the U.S. Department of Labor administers the Occupational Safety and Health Act of 1970. It requires that any company with 11 or more employees keep certain records and make reports including all work-related deaths, injuries, and illnesses. A report is not required for minor injuries needing only first aid treatment. A report must be filed with the local OSHA office if the injury involves medical treatment, loss of consciousness, restriction of work or motion, or transfer to another job. More information on OSHA reporting can be found at the following website:

http://www.osha.gov/recordkeeping/

FOOD SAFETY GENERAL RULES

Honey producers that wholesale or distribute are subject to the Georgia Department of Agriculture's Manufactured Food Regulations Chapter 40-7-18. These regulations can be found on the Manufactured Food Program's webpage:

http://agr.georgia.gov/manufactured-foods.aspx

U.S. CODE TITLE 7, CHAPTER 3, PART 322

Honey bees are restricted organisms regulated under federal code. Honey bees arriving in the United States must be accompanied by a valid certificate from the country of origin. Honey bee swarms discovered on vessels or containers arriving at a U.S. port must be reported to U.S. Customs & Border Protection (CBP) immediately. This includes swarms found anywhere on any maritime terminal. There is a high risk of accidental introduction of Africanized honey bees (AHB) which may be very aggressive and dangerous. Federal Regulations require that these honey bee swarms discovered at a port of entry must be destroyed. In these situations, establish a buffer zone and keep people away until a licensed HPC operator can be summoned to control and collect the swarm.

RULES OF THE FEDERAL TRADE COMMISSION (FTC)

https://www.ecfr.gov/current/title-16/chapter-I/subchapter-D/part-429/section-429.1#p-429.1(b)

FAIR BUSINESS PRACTICES ACT OF 1975

http://agr.georgia.gov/Data/Sites/1/media/ag_plantindustry/structural_pest_control/files/FBPA-Jul-2021.pdf

CHAPTER 2: CAVITY NESTING INSECTS AND IDENTIFICATION

KEITH S. DELAPLANE, UGA DEPARTMENT OF ENTOMOLOGY

The most common cavity-nesting insects you are likely to encounter in Georgia are honey bees, bumble bees, and yellowjackets. Open-nesting paper wasps (Fig. 2.1), tunnel-nesting bees (Fig. 2.2), and arboreal hornets (Fig. 2.3) are not covered in this chapter. Identifying the different cavity-nesting insects that can be confused with honey bees is a matter of knowing the life history of these social insects. It is important to identify insect specimens and if there are any questions, samples can be sent to your local extension office for proper identification.

FIGURE 2.1 Open-nesting paper wasps of the genus Polistes. These common wasps build single open-air paper combs, usually under eaves, decks, or similar protected places. Photo credit: Jane Quattlebaum

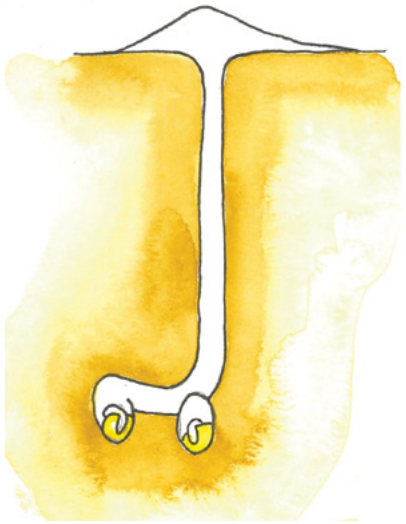


FIGURE 2.2 Surface features and nest design of soil-nesting miner bees.

FIGURE 2.3 An arboreal (tree-associated) paper nest of hornets. Photo credit: Nancy Hinkle.

HONEY BEES

The nest

Honey bees live together in large social colonies, each made up of tens of thousands of sterile female workers (Fig. 2.4), up to a few hundred male bees called drones (Fig. 2.5), and one queen (Fig. 2.6). In Georgia, almost all honey bee colonies nest inside pre-existing cavities such as hollow trees (their natural nesting site) or wall voids. On rare occasion a colony will build its nest in the open (Fig. 2.7), but such colonies rarely survive winter.

FIGURE 2.4 Image of honey bee workers. One honey bee colony contains from 10,000–50,000 sterile workers, depending on time of year.

FIGURE 2.5 A male or drone bee, the larger bee with bigger eyes, in the center of the photograph.

FIGURE 2.6 A queen honey bee surrounded by her "daughter" worker bees. A normal colony has one queen who lays all the eggs in the colony.

With rare exception (see Yellowjackets), honey bees are the only cavity-nesting insects in Georgia that live together in a large group year-round. Bumble bees, yellowjackets and hornets all lapse into a solitary phase over winter during which mated queens hibernate in isolation and emerge next spring to start new colonies. Honey bees are thus considered complex or perennial social insects whereas the others are simple or annual social insects.

Honey bee colonies divide in spring by a process of colony division called swarming. The overwintered colony rears a new queen who in-

FIGURE 2.7 Only rarely do honey bees build their nest in the open. In Georgia such colonies almost always die over winter.

herits the parent colony. The old queen departs with about half the workers in a flying cloud of bees called a swarm The swarm settles in a temporary bivouac (Fig. 2.8) on any kind of object, most often a tree limb, where it remains while scout bees locate an available empty cavity. Within hours the clustering bees relocate to the new cavity where they immediately begin building a series of 6–12 parallel beeswax combs, each made up of hexagonal cells in which brood are reared and food is stored. Well-protected colonies in spacious cavities can achieve great size in a year or two (Fig. 2.9).

This swarm process is the origin of all problem colonies that result in bee removal calls. Understanding this biology is important for doing the job right. Scout bees looking for a new nest site are looking for cavities at least 8–16 gallons in volume and with a small, defensible entrance. The odor of previous occupants is a powerful attractant; therefore some bee cavities appear to have been occupied for years. A succession of swarms can give a nest

FIGURE 2.8 A reproductive swarm temporarily bivouacked on a park bench. Beekeepers are happy to retrieve such swarms if they are safely and easily accessible.

FIGURE 2.9 A large honey bee nest in the wall void of a structure.

site the appearance of immortality when in fact the average lifespan of a colony is only 5 years. An important part of any bee removal job is making sure that the cavity is filled in and its entrance sealed to guard against future swarms.

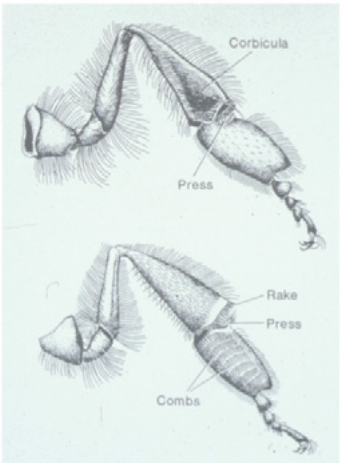
The location of a nest entrance is indicated by traffic of the bees themselves and by surrounding wood or siding discolored by their travel stain (Fig. 2.10).

FIGURE 2.10 The entrance to a honey bee nest cavity on a carved wooden pole illustrating the activity and traffic indicative of a nest entrance.

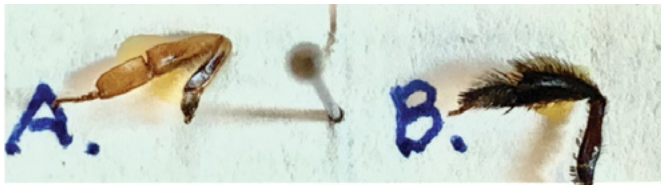
Identifying individuals

Figures 2.4–2.6 show honey bees in their normal social context in a colony. But a pest management professional may often need to identify isolated specimens, and in such cases it's easy to confuse honey bees for similar-looking near relatives. Honey bees possess a special pollen-carrying structure on the hind legs called the corbiculum or pollen basket (Fig. 2.11). All bees carry pollen on their bodies, but most species do so only with unspecialized features like extreme hairiness on the legs or under the abdomen (Fig. 2.12). In Georgia, only two types of bees possess true pollen baskets—honey bees and bumble bees

Pollen basket of honey bee hind leg



Winston, ML. 1987. The biology of the honey bee. Harvard University Press.



A: Hind leg of honey bee
B: Hind leg of solitary bee showing undifferentiated long pollen-carrying hairs

FIGURE 2.11 Diagram, *left*, and photographs, *right*, comparing the hind legs of honey bees (with pollen basket) and solitary bees. In Georgia, the only bees possessing a true pollen basket are honey bees and bumble bees. The pollen basket is comprised of two widened and flattened sections of the hind leg

(see next section). The pollen basket is comprised of two widened and flattened sections of the rear leg. Pollen is packed into a ball on one of the flattened sections, enabling the bee to efficiently carry the load back to the nest (Fig. 2.13). Knowing this one characteristic can help you avoid identification mistakes between honey bees and similar-appearing specimens. Figure 2.14 shows how easy it is to confuse a honey bee worker with another common bee in the Southeast—the ground nesting squash bee. The presence of a pollen basket makes it easy to distinguish the honey bee.

Out of their contexts, honey bee queens and hornets can be surprisingly difficult to distinguish. They have roughly the same coloration and body shape and size. As the pollen basket is greatly reduced in the honey bee queen, the most important differentiator in this case is the presence of longitudinally folding wings in the hornet (compare Figures 2.6 and 2.22).

FIGURE 2.12 Images of a soil nesting bee and carpenter bee showing alternative pollen-carrying structures (hairs) used by bees other than honey bees.

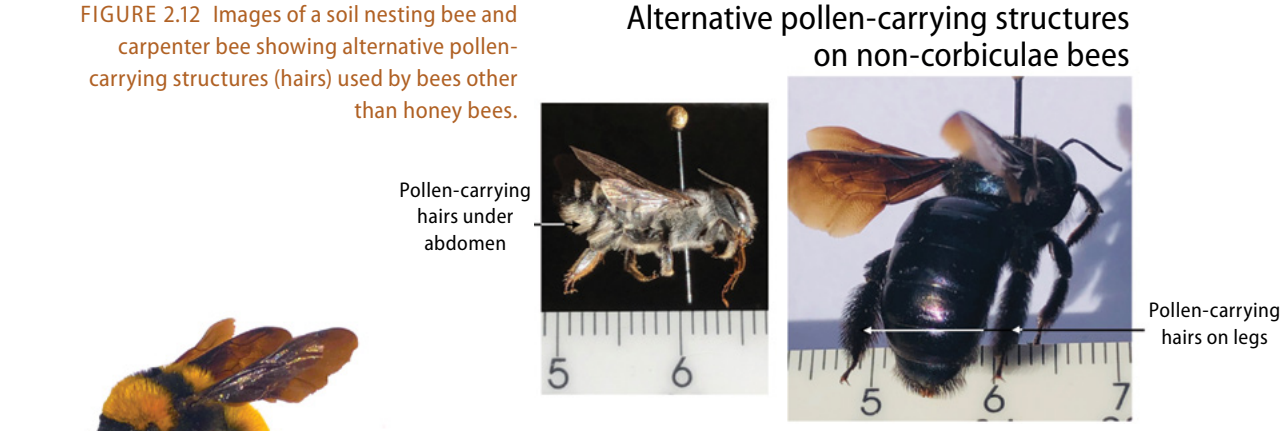


FIGURE 2.13 Possession of a pollen basket, or corbiculum, and its associated structures allows a bee to rake its pollen load into a concentrated ball on the middle leg section. The honey bee in this figure is showing a loaded pollen basket.

FIGURE 2.14 Images of a solitary bee, the squash bee, and honey bee (*on the right*) illustrating that some bees can be easily confused for honey bees. Note how the hind legs of the squash bee are neither widened nor flattened; the squash bee relies on undifferentiated long hairs all over its body for carrying pollen.

BUMBLE BEES

The nest

Bumble bees are an example of a simple, annual social species. Their life cycle includes a solitary phase during which mated females overwinter in isolation. In spring, the new queen emerges from hibernation and seeks out a pre-existing cavity, usually a hollow in grassy thatch. Fibrous material—whether grass, hay, or even upholsterer's cotton in abandoned furniture—seems to be an essential requisite (Fig. 2.15). Abandoned rodent burrows are especially attractive. The queen enlarges the hollow and begins single-handedly foraging for pollen and nectar. She forms a ball of pollen on the floor of the chamber, lays one or more eggs in it, and incubates the brood clump with her own body heat like a nesting bird (Fig. 2.16). Each additional clutch of emerging worker daughters helps the colony grow at an accelerating rate. The mother and daughters build and incubate additional brood clumps, but only the mother lays eggs. The mother eventually cedes all foraging duties to her daughters. Cocoons emptied by an emerging young bee are repurposed into food storage pots. There is no fixed pattern to the growth and expansion of these pollen/brood clumps and emerged cocoons, and the total nest volume of these "combs" rarely exceeds the size of a softball (Fig. 2.17).

FIGURE 2.15 An abandoned bumble bee nest in a bluebird box inside the old bird nest. Note the yellow cocoons and darker brown storage pots. The bees require fibrous matrix inside which they construct their irregular combs of pollen, beeswax, and cocoon silk.

FIGURE 2.16 Illustration of a bumble bee queen incubating a brood clump inside her nest. In the earliest stages of colony founding, an overwintered queen collects a pollen ball, lays one or more eggs in it, and incubates the brood clump with her own body heat.

FIGURE 2.17 A view inside a mature bumble bee (*Bombus auricomus*) nest showing bumble bee workers, pupae (yellowish ovals) and storage pots (old pupal chambers with darker-brown 'caps'). Photo credit: Sydney Cameron, University of Illinois

Identifying individuals

Bumble bees are generally recognizable by their iconic hairiness and strong black and yellow coloration. But as we will see below these characters are not reliable when it comes to precise identifications. Bumble bees share with honey bees the distinction of being the only bees in the Southeast that possess a pollen basket on the hind legs (Figs. 2.11, 2.13). This is important for distinguishing a bumble bee from a common look-alike, the solitary wood-tunneling eastern carpenter bee, *Xylocopa virginica*. The eastern carpenter bee has the added distinction of possessing a metallic solid black abdomen whereas the abdomens of bumble bees are hairy with alternating black, yellow or buff colored banding (Fig. 2.18). Confusion between the two species is most likely early in spring when carpenter bees and bumble bee queens are active at the same time. Size differences between the two species become more apparent as the season progresses. Bumble bee queens are increasingly staying at the nest while their workers are assuming more field duties.

Workers are smaller than queens and more variable in size. Because of their small- to medium size, bumble bee workers are easily confused with solitary species, some of whom with their hairiness and strong black and yellow coloration bear striking resemblance to bumble bees (Fig. 2.19). The presence or absence of a pollen basket is the crucial distinguisher in such cases.

FIGURE 2.18 Comparing images of the bare solid black abdomen of a carpenter bee (*on the right*) to the hairy yellow and black striped bumble bee abdomen (*on the left*).

Bumble bee queen

Carpenter bee

FIGURE 2.19 Image of a solitary soil-nesting miner bee that closely resembles a bumble bee. The muddiness of this specimen is a clue to its' identify, but the crucial distinction is the lack of a pollen basket (not clear in this photo). Photo credit: William Norris

YELLOWJACKETS

The nest

These social cavity-nesting wasps are notorious for their surprise summertime attacks on unsuspecting animals and people who happen upon their nest entrances. They are another example of a simple, annual social species in which mated queens overwinter in isolation and emerge the following spring to found new colonies in pre-existing cavities. Like other wasps, yellowjackets are carnivores and feed mostly on other insects, although they will forage on flower pollen, animal carcasses, garbage cans and picnic items. The nest-building material is essentially paper; the female scrapes wood from any available surface, chews it into a damp pulp, and uses it to shape incipient cells in the new-found cavity. Cells assume their iconic hexagonal shapes, not from any architectural necessity imposed by the wasp builder, but rather by laws of physics—the fact that elastic cylinders spontaneously form hexagons when each receives equal pressure from surrounding cylinders. Around this central comb of hexagonal paper cells, the mother wasp and her emerging daughters construct a continuous envelope of the same wood-pulp, paper material (Fig. 2.20). The envelope is continuously enlarged to accommodate the growing number of paper combs. Although underground cavities are the most common nest site, yellowjackets will not hesitate to nest in other cavities including the hollow walls of man-made structures.

Every year a small number of yellowjacket colonies abandon the typical annual life cycle and persist into a second full season, achieving huge size in the process. This amazing feat of endurance and reproduction is achieved by retaining numerous daughters who each mate and contribute offspring to the colony. These multi-year or perennial colonies can be so large that their paper envelopes erupt out of the original cavity, with populations reaching tens of thousands of individuals (Fig. 2.21).

FIGURE 2.21 A perennial (multi-year) yellowjacket nest in an abandoned storage shed whose paper envelope has expanded beyond the original nest cavity.

FIGURE 2.20 View inside an incipient (young) yellowjacket nest showing the interior hexagonal paper comb with eggs and larvae visible inside some of the cells. This pattern of nest architecture is common across arboreal hornets (Fig. 3) as well as yellowjackets. Photo credit: Celia Davis

Identifying individuals

Yellowjackets are an iconic insect easily recognizable to most people. But there are some objective characteristics that help distinguish them from paper wasps, hornets, or even bees.

First, yellowjackets share with hornets the property of having longitudinally folding wings (Fig. 2.22). This explains the striking "narrowness" of their wings when they are viewed from above in a resting state. This wing-folding capacity, along with their reduced hairiness and lack of a pollen basket, definitively separates yellowjackets and related wasps from bees. Among their wasp relatives, yellowjacket workers are comparatively small, each less than 1-inch long. Additionally, the body coloration of yellowjackets tends to be a true and bold yellow and black (Fig. 2.23), whereas bees, hornets, and paper wasps have more variations of brown, orange, tan, and yellow.

FIGURE 2.23 Yellow and black-striped yellowjackets attempting to rob a bee hive.

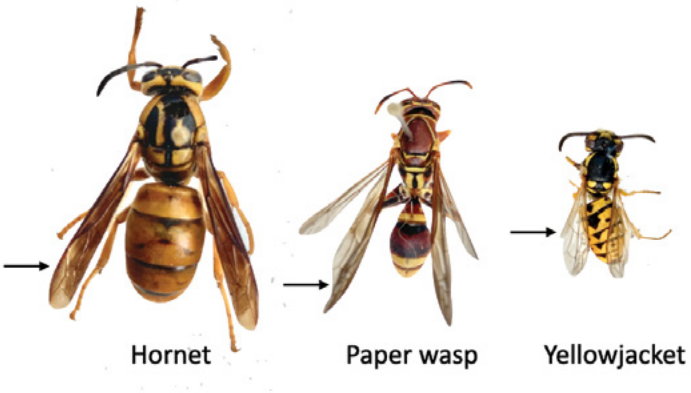


FIGURE 2.22 Members of the wasp Family Vespidae have longitudinally-folded wings.

CHAPTER 3: BASIC CONSTRUCTION AND INSPECTIONS TO PLAN A REMOVAL

Certified honey bee removal (HBR) professionals must have knowledge concerning building construction and should never attempt a removal from a building without being familiar with the construction practice used on that building. Any area or cavity created by a type of construction practice can be a potential nest site. Familiarity with the construction style of a building is essential prior to initiating a honey bee removal. If you are not familiar with a particular type of construction, it is incumbent on the HBR expert to consult with someone that is familiar with the construction prior to attempting a removal. This chapter covers some of the most common building practices that provide voids in which honey bees can build nests.

All construction falls into two broad categories based on the means employed to provide support and shape to the building. The first is termed framing construction where wood, engineered wood, or structural metal are used to provide support and shape to the building. The second is called mass wall construction where layers of stacked material like logs, masonry, rammed earth, adobe or other materials are used without framing. Most building types can be placed into two additional broad categories, either residential or commercial. Residential construction is where most bee removals are requested so this manual provides examples from common wood-frame construction.

A building's frame is much like your skeleton. It provides support. Most residential construction is made up of wooden framing-members assembled to form the shape of the building (see Figs. 3.1 and 3.2). The purpose of the framing is

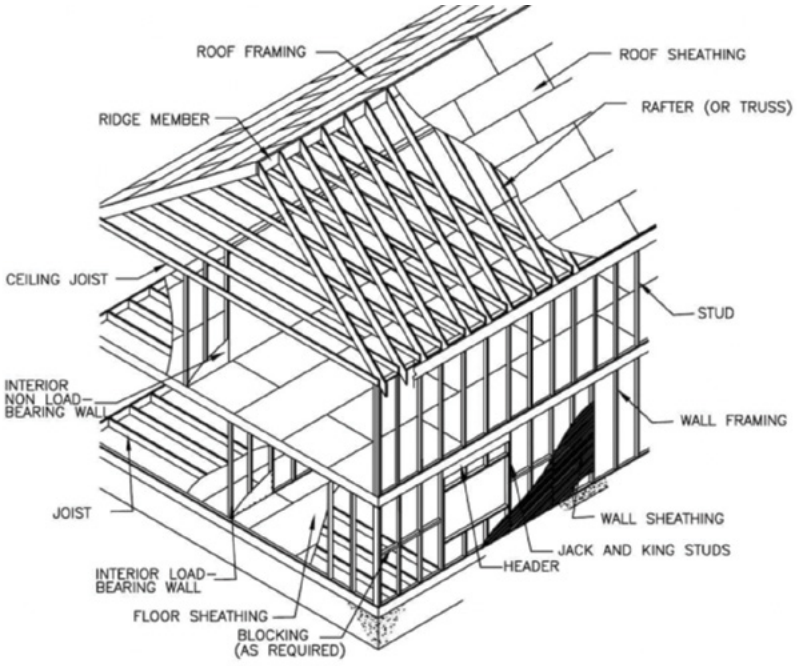


FIGURE 3.1 Diagram that labels different parts typical of wood-frame construction.

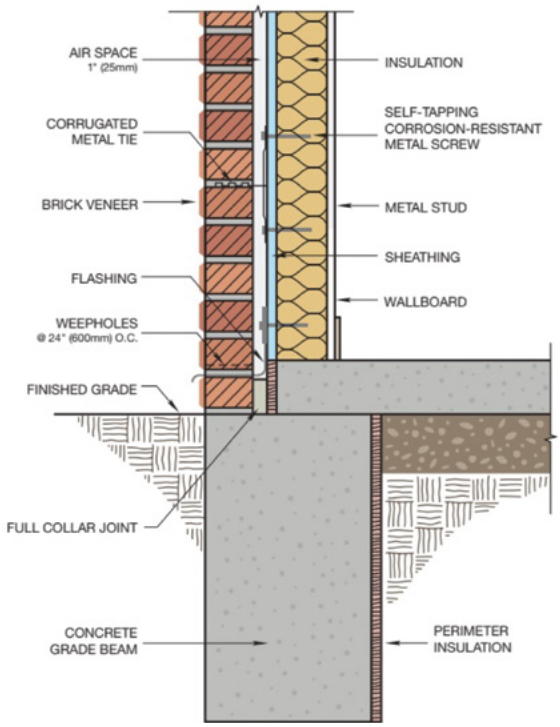


FIGURE 3.2 Diagram of how typical brick veneer cladding is arranged on residential buildings.

to distribute the weight of the building and its contents back to the ground. A HBR operator should never cut a structural member to gain access to a honey bee colony. Cutting the structural support framing will redistribute weight and stress loads, causing structural members to sag, buckle, or break. All honey bee removals should begin by removing the appropriate cladding that overlays the framing which could be siding or brick veneer on the exterior and sheetrock/plaster on the interior or for attics, roof decking.

Components

The basic components of a structure aside from structural framing consist of the foundation, walls, and roof. These features also can include elements such as eaves, overhangs and soffits. All buildings have walls that are framed for support and covered with interior and exterior cladding—for example, drywall or paneling on the interior and siding or brick veneer on the exterior.

Foundation

The foundation of residential construction can be composed of concrete, stone or masonry and can be a slab-on-grade, excavated to provide a basement, or raised, creating a crawlspace. Honey bees rarely find a void under slab-on-grade construction. Raised foundations and basement construction, however, provide numerous opportunities for a colony to establish a nest (Fig. 3.3).

Sub-floor

The sub-floor sits on top of the floor joists that rest on a sill plate on top of the foundation and usually consists of a layer of plywood or ¾-inch boards. Foundations, whether raised or on grade, can crack and settle over time. It's not unusual to see a ¼- to ⅜-inch crack in different places between the foundation and the sub-floor or where exterior cladding changes from brick veneer to siding (Fig. 3.4). This is a prime target for honey bees to enter a crawl space area, basement, or building features such as wall voids.

FIGURE 3.3 Image of a colony attached to the underside of a subfloor in a crawlspace. The colony extended another 10 inches upward into the subfloor. From top to bottom, the comb of this colony was more than 30 inches tall and the base (the end attached to the subfloor) was about 20 inches in diameter. There were more than 10 lbs of bees and greater than five gallons of honey removed with this hive.

FIGURE 3.4 Image of residential construction where the exterior cladding, in this case wood-siding, was removed in addition to a section of the joist header to gain access to a colony. This is a two-story house and bees gained access through a crack between the brick and siding and built a comb between the joists supporting the flooring of the second story

Exterior walls

The exterior walls in residential construction generally consist of 2x4s measuring eight-to-twelve-feet long spaced on 16-inch centers that leave voids between joists that are 14 ½ inches wide. This cavity, called a wall void, is another prime location for a colony to nest. There's just enough room within a wall void for a colony to place three sheets of comb that can be six or more feet long. On top and bottom of the studs, is another piece of lumber, the sill plate, laid on its' side (top or bottom sill, based on position). One of two things can be found on the top plate. If the house has two stories, you'll find another set of joists (second story floor), subfloor, another top sill plate and below that wall studs. If the house is one story the wall studs will support a top plate that holds ceiling joists and roof decking along with the roof material. This area created by peaked roof construction is known as the attic.

Concrete Block Walls

Mass wall construction using cinder blocks, stone or wythed brick presents a somewhat different scenario for creating voids capable of harboring a hive. Generally, the only way to access the void is to remove sections. Once the bees have been removed, the void should be filled with concrete or mortar mix.

INSPECTION PRIOR TO PLANNING AND CONDUCTING A REMOVAL—HOW TO FIND THE NEST

There are typically 40,000 to 60,000 bees in an established feral honey bee colony. Swarming colonies typically select large cavities where they can expand the size of the nest comb as the colony grows. The first stage of any honey bee removal is to find the entrance hole to the nest cavity which will be evident by bees leaving and returning to the hive. Once the entrance is located, the next critical step is to determine the position and extent of the void. Honey bees are opportunistic and don't work to create a nest cavity or an entrance hole. Therefore, most hives are in a void opposite or near the entrance hole. Common examples include an entrance hole where two floors come together: 95 percent of the time they'll be in between the adjacent floor joists. In homes with brick veneer on the bottom of the wall framing and siding on top, bees access wall voids where bricks and siding meet (Figure 3.5). Buildings with wood cladding can have knotholes which bees use to gain entry to wall voids behind the siding.

Once the entrance to the nest cavity is determined, try to locate the position of the hive within elements of construction. When judging the potential position of a void housing a bee colony, keep in mind that bees like to hang. Whether the bees build nest comb between joists, wall studs, in an overhang, or a bay window cavity, they'll work down from where they can attach the comb near the top of the void. The position of the hive can be ascertained from the position of the entrance hole relative to the building construction, but it is also useful before removing elements of the building to more accurately estimate the size and position of the nest comb. There are four broad categories of techniques that can be used to narrow the area of interest for planning a removal. Temperature difference, sound generation, and measuring are non-invasive while probing is because it involves altering the interior or exterior cladding

to feel or see inside the void. Any or all of these techniques should be used to identify the position of the hive prior to removing elements of construction to most efficiently access and remove bees and comb.

Temperature difference

Honey bees maintain a temperature in the area of the brood comb (nursery area) between 91–97°F (33–39°C). This temperature inside the hive often creates a temperature gradient along elements of construction around the nest cavity. A laser thermometer or an infrared (IR) camera can be used to identify differences in temperature on elements of construction to help locate the position of the main part of the hive. IR cameras, which allow visualization of surface temperature, may also illuminate the position of studs or joists. Setting up a temperature differential in the building can assist when using these technologies, making a morning inspection in the summer better at providing evidence of objects under interior/exterior cladding. One of the easiest ways to determine where bees are is to simply put your hand over the place you think they might be. Interior cladding such as drywall is a good place to try this technique. Place the palm of your hand flat against the wall and start far enough over to one side of where the nest might be and slowly move your hand towards the possible nest. Feeling a temperature difference can identify the nest area. To notice temperature differences in carpeted floors the carpet and padding must be removed.

Audio techniques

Another way to find the nest is to listen. Honey bees will respond to a disturbance with a low hum if you knock on the cavity wall. A stethoscope or other audio amplification device can be used, or put your ear to the wall to listen. The bees will produce a low hum in response to knocking, not a frantic buzz.

Measuring

A good practice when attempting to delineate the position of a hive while conducting an inspection is to measure where the entrance hole to the cavity is on the building exterior as it relates to something you can see on the interior, such as a window or the edge of a wall. This will give you an idea if there are deceptive or hidden voids in the construction before you start removing interior or exterior cladding.

Probing a void to verify the extent of a cavity

Probing involves putting a hole in the interior or exterior cladding to see or feel presence/absence of comb to find the position of the hive in a void. A borescope is an option that can be used to view inside a void to access the position and extent of a nest. Presence of a nest can also be identified by the resistance against and/or honey on a probe. A common practice is to use a drill with a section of metal coat hanger as a bit. A probe can be made by cutting an 8- or 10-in long piece of metal coat hanger on a slant at one end. Put the wire probe like a drill bit in a power drill and drill through the drywall over a void area suspected of housing a nest. If the probe feels sticky it probably struck honey which is indicative of a nest. Probing a void below flooring or other interior cladding requires pulling back the carpet and padding and drilling a small hole with a regular drill bit through the flooring and/or subfloor before probing with the coat hanger bit. Use the same procedure on ceiling voids while using a

slightly longer coat-hanger probe—12- to 14-in long. In the absence of finding honey with the probe the presence of brood or dry comb can be 'felt' by slightly bending the coat hanger bit about three inches from the tip after inserting it into the hole. Once bent, spin the probe. If it spins freely there is nothing in the void but if inhibited it might be a nest.

DOING THE REMOVAL—TRAP-OUT OR CUT-OUT

Once the inspection identifies the location of the honey bee nest the HBR operator must decide on the feasibility of conducting and completing a cut-out. Another option for bee removal is a trap-out. It is important to remember that the trap-out method will only remove bees from a hive. The honey, comb, and debris remain in the cavity in which the bees were removed. The nest is susceptible to releasing honey in the structure where it remains, and/or becomes an attractant for other pest problems. This method of bee removal should only be used if a cut-out bee removal is not possible. Every contract for a trap-out honeybee removal job type must contain the following statement,

> **This job will only remove honeybees. The wax comb, honey, brood and other associated material will remain in the structure and may result in reinfestation and secondary pest issues.**

The first decision on a cut-out is to determine whether the removal will be conducted on the interior or exterior of the building. The decision to remove interior or exterior cladding is situational and should be determined by circumstances surrounding the location and size of the nest, building construction and the agreement of the property owners/residents. The step-by-step procedures outlined in the following supplementary materials are designed to illustrate the basics of doing a honey bee removal using common scenarios. However, there are multiple ways to access and remove a colony of honey bees. All honey bee removals are unique given the circumstances of the building construction, surrounding landscape and size of the colony to name a few of the factors involved in any removal. The situational qualities of each removal must be weighted including the ease of gaining access to the comb, how to most effectively remove the comb, and repairs needed to return the structure to a condition that will prevent re-infestation. The overall action plan should include information obtained from the property owner to help ensure their satisfaction with the work.

Keeping good records is essential to a professional business. The list of items that should be maintained will vary by business type and size. HBR is often a single person business and this manual is not designed to be a business plan. It is important to remind small operators that recordkeeping involves organizing all reports, invoices and receipts provided to the customer. Recordkeeping also involves maintaining an inventory of necessary equipment and supplies. The remainder of this chapter discusses those items.

PERSONAL ATTIRE, PROTECTION AND COMFORT

CLOTHING Bee veil and light-colored, short sleeved work clothes usually work well. One-piece veils that have a cotton hat are easier to work in and are more flexible than the ones that go over a hard hat. However, you never know how bees will react until you get to the job site. If the bees are aggressive, you may have to put on a long-sleeve, light-colored shirt. Always keep gloves, a full bee suit, and extra shirts on hand. Bee suits lack openings to provide ventilation for a reason so be mindful of the temperature and your body's reaction to it on hot days.

EAR PLUGS Especially helpful if working in a confined area such as a closet, bathroom, or attic. A bee vacuum and power tools make noise. Providing protection from repeated exposure to excessive noise by using earplugs while conducting a HBR is a good practice.

EYE WEAR It is important to wear protective eye wear when using hand or power tools that produce particles that could injure your eyes.

FOOD AND DRINK Always have plenty of water on hand to stay hydrated. It's easy to get overheated or dehydrated. Sometimes a bee removal can last much longer than planned and having food and water on site—snacks or a full meal—can save time for completing a job.

FIGURE 4.1 Removing honey bees with a bee vacuum from comb cut out of a wall void during a Cut-Out while wearing a full bee suit and gloves

SUPPLIES

There are items you'll replace often. A short-list of the most common follows.

LADDERS Ladders are indispensable for reaching honey bee nests above ground level. Four heights are recommended: a 6-step ladder with paint tray; and 24-, 32-, and 40-ft extension ladders.

FIBERGLASS BATT INSULATION There are a number of products that can be used to fill a wall void after a HBR. There is an odor left after any HBR that will alert other honey bees to the potential nesting site. Filling that void after a HBR will reduce the chance of a re-colonization. Fiberglass batt insulation is recommended for ease of use, storage and transport.

CAULK Most HBRs involve caulking to seal around the exterior elements of a cavity to prevent entry by bees. The type of caulk required for a job will depend on the composition of the cladding removed to expose the cavity. Use a caulk that is rated for the material whether metal, mortar, wood or other.

NAILS AND SCREWS Keep a supply of trim, panel, finishing, and roofing nails. All size nails from very small to 16d are recommended. An assortment of sheet rock and decking screws should also be on hand with the recommendation to use the star headed screws in a variety of sizes including 3-in. It helps to have a pouch (or two) with different compartments and a draw string on top. Nail pouches can be tied to the top of a ladder and won't spill if dropped.

WIRE SCREEN There are a variety of uses for wire screen depending on circumstances. Galvanized ⅛-in mesh is recommended for plugging entrance holes or other areas too big to be sealed by caulking alone. You can also bend screen wire to give bees something to crawl on when using a bee vacuum to put bees into a bucket if you run out of frames.

FIGURE 4.2 Image of the tools and supplies required on site for a HBR.

DROP CLOTHS A drop cloth is used to cover floors, furniture, walkways, large open doorways and sometimes walls whenever a sensitive or hard to clean surface might come into contact with honey or wax during a removal. The choice of material—plastic or cloth—is a matter of personal preference but the main idea is to make clean-up easier.

PLASTIC BAGS AND BOXES HBR professionals take all the comb from a cavity and must therefore be prepared to carry all that material off the job site. A supply of large, heavy-duty plastic trash bags inside a cardboard box, a 32-gal plastic storage container with tight-fitting lid or a metal or plastic garbage can is useful for this pupose. The key features are a sturdy container that can be rinsed at the end of the day. The main point is to have enough container space to accommodate all the comb removed from a void.

RAGS Keep a few rags, cloth or paper, to use for cleanup of tools, hands, walls, windows, sills, door knobs, or any other item that needs cleaning at the end of the job.

PENCILS Necessary for marking cut lines, joist locations, or items on elements of construction.

COAT HANGER WIRE Unwound wire from old metal coat hangers can be used for probing elements of construction or retrieving tools dropped into tight/small spaces.

TAPE Duct tape is an all-purpose item on site for any HBR professional. Other types of tape can be used in situations that require later removal that might damage interior wall cladding or paint.

RATCHET STRAPS Heavy duty 2-to 4-in ratchet straps have multiple situational uses including securing equipment in a vehicle, on the job site (while working on a tree or a column) or for holding a bee box together.

BUCKETS Keep several three-gallon buckets for lowering comb and tools up and down the ladder. Also keep a smaller bucket for water and a few rags in this for cleanup.

SMALL BROOM This is good for sweeping up sawdust and other debris after a job. A small shop vacuum will serve the same purpose.

BUCKET CLIPS These are used to hook onto buckets, bee vacuum, etc. when working on a ladder. They're available in the paint dept. of hardware stores.

ROPE It is recommended to carry a braided nylon rope long enough to tie off a ladder for safety. The rope can also be used, if you have a helper, to lower a bucket from the top of a 32-ft ladder to save climbing up and down to empty tools, honey, or brood comb.

PLASTIC TOTE Carry several (at least three) at all times. This is what we put the honey and brood in as they're removed from the cavity.

CUSHION FOAM Foam used in chair cushions can be cut or torn to fill voids that require caulking but are too big/deep to be covered with a bead of caulk.

FLAT BAKING SHEET PAN Can be useful on jobs that require reaching into a deep cavity. It may be necessary to tape your hive tool to a long, flat, 1 x 2 and scrape the comb off the top of where it's hanging. You'll let it fall onto the baking sheet pan which you've also attached to a piece of 1 x 2.

Hand Tools

PUTTY KNIFE Get one that's slightly flexible for difficult spots. You'll also use this for applying spackling during sheetrock repairs or smoothing caulk beads. Putty knives are useful to keep a sheet rock piece from falling down a wall.

UTILITY KNIFE This is invaluable and used mainly for cutting comb that's too long to get

out cleanly. Often layers of comb will be long, and can be hard to manage when packed with honey. A sharp, clean knife is also good for cutting insulation or the tops off caulking tubes.

DRYWALL SAW For cutting sheet rock. There is no need to drill a hole to get it started—just put it in place and hit the end with the base of your hand.

PRY BAR It's good to carry two pry bars, including a small one with a nail puller on the end (sometimes called a cat's claw). The other should be a larger flat bar which offers more leverage.

HAMMER A tool useful for a variety of tasks such as driving nails, pulling nails, and knocking holes.

PLIERS Mainly used for pulling up the edge of carpeting to expose flooring.

TAPE MEASURE It is important to be able to measure any number of things on a honey bee removal site. Measuring from the entranceway to the edge of the building on the outside and then duplicating this measurement on the inside will often help pinpoint the occasional deceptive construction practice that is providing a hidden void for a hive.

WIRE CUTTERS Nothing works better for removing stubborn nails after the nail-head gets popped. Also good for cutting coat hanger probes.

SCREWDRIVER SET A multi-use set with interchangeable heads that fit your drill is recommended.

DRILL BITS The best drill bit set would have the usual set of standard metal and wood drill bits along with screwdriver bits as well as Sheetrock and decking screw bits.

CAULK GUN Recommended to use ones that have a piercing rod on the end.

WOOD CHISEL Useful for neatly cutting long pieces of wood or plastic trim in order to remove a board underneath.

STAPLE GUN AND STAPLES On occasion you'll need to tack down wire screen over a hole or hold insulation until you can get a board in place.

PRUNING SHEARS/CLIPPERS Handy for cutting a limb or branch to remove a swarm. Also handy for pruning bushes to allow a ladder to lean against a wall

NAIL PUNCH A good tool to punch a nail through siding when you can't pull it out, or for fine finishing work after removing a hive.

Power Tools

Cordless tools are recommended but don't forget extra batteries. **WARNING:** Power tools can cut through many different types of materials, including electrical wiring and plumbing. Power tools often kick back and can cause serious injuries, especially when used while on a ladder. Remember to follow all safety recommendations from the manufacturer, and always check your surroundings before cutting into elements of construction.

DRILL A drill with a quick release (one that doesn't require a chuck key) is recommended. A bag-type carrier is a handy place to keep drilling tools in one, easily carried place.

CIRCULAR SAW A saw that is used for any number of tasks but mainly for removing flooring and cutting to access voids and affect repairs.

RECIPROCATING SAW OR MULTIPURPOSE OSCILLATING TOOL These are used for cutting nearly

FIGURE 4.3 A view of some of the power tools often used to complete a HBR.

everything: flooring, overhangs, roofing, etc. Certain power tools can produce dust and debris depending on the material being cut; be aware what tools work best to avoid unnecessary messes.

Electronic Equipment

CELL PHONE Important on every HBR especially if you are working alone. While wearing a full bee suit be sure your cell phone is accessible and not stored where you have to unzip to reach it.

CAMERA Most cell phones have a camera but using any camera, even a one-time disposable camera, should be a part of any HBR. Pictures provide a record of what was done and should be used in writing reports to maintain a record that can be used to respond to questions or concerns about what was done on a job and when.

FLASHLIGHT It is recommended to use a rubber handled one that can be washed. Always carry spare batteries and a spare flashlight. LED flashlights are preferred because LED light does not attract bees like regular bulb lights. Any measure you can take to avoid attracting the attention of bees that are already agitated is a good business practice.

ADAPTER Many older homes don't have the three prong outlets. Carry several of these in your tool bag.

DROP LIGHT Seldom used but on occasion it will come in handy. However, be aware that lights can get very hot and will attract and kill bees. (Also be careful using a drop light around things that can melt such as PVC plumbing, venting or electrical wire casing).

EXTENSION CORD Carry several cords in lengths from 25 feet up to 100 feet. You never know just how far away the cavity will be from an outlet. It is useful to have one cord with a multiple outlet on the end.

FIGURE 4.4 The wooden exterior cladding is removed revealing the honey bees, honey, and brood comb inside two voids created by wall studs.

Beekeeping Tools

BEE-BOX FRAMES It is important to bring frames to the job site to place the brood comb that is removed from a void.

RUBBER BANDS It is recommended to have a large bag of rubber bands on site. At least 6 rubber bands arranged in both directions across a frame are used to hold the comb in a frame. The bees will chew through and drag the rubber bands out of the hive after they've melded the comb into the frames.

BEE VACUUM This tool is essential for quick removal of bees on the comb once the nest cavity is exposed. It is important to also carry hose extensions to attached to the bee vacuum to effectively reach distances beyond what a single hose can provide. Bees will gravitate towards light if a window or skylight is near the exposed hive. Bees also will run to the back of a void and a long hose helps get those clumps of bees. A hose-end attachment with a narrow opening is helpful when removing bees from small cavities, cracks or hard to reach places.

QUEEN CAGE A large cricket cage or plastic queen cage works for holding the queen until the removal is finished. The queen should be marked and placed in the cage with a few workers.

HIVE TOOL This tool resembles a small prybar with a scraper on one end and can be used to scrape comb from whatever surface it is attached. Keep several on the job site because they can be inadvertently dropped into a void.

All honey bee removals result in an accumulation of feral bees and oftentimes honey. The honey bee removal expert must decide what to do with the bees captured and honey collected during the removal procedure.

It's important to first examine the bees and comb removed and check for infestation with a bacterial disease called foulbrood. If the brood comb looks questionable (dark brood caps, dead pupae, sunken cells with a greasy/glossy sheen), properly discard the honey from that hive because the disease is transmitted to other bees through infected honey. It is also recommended the bees from a foulbrood-infected hive be destroyed by placing them in a bucket of soapy water. Use ethanol to clean all equipment and tools used in the removal of a diseased hive. Soap and water are otherwise recommended to remove honey and wax from tools after other removals.

The HBR professional must decide how to handle the bees and honey obtained from any removal. All bees from a healthy colony can be redirected, after a removal, to a managed state by a beekeeper. The honey, however, cannot be used for human consumption. The conditions surrounding a removal will play a role in decisions regarding the collected bees and honey. A colony collected without a queen can be requeened while those with a queen can be moved directly to a managed hive. Returning bees to a managed situation requires proper handling of the bees and of the brood and honey comb (see recommended procedures below).

Care of the Honey

Honey comb should be placed in containers during a removal. Honey from a healthy colony can be fed back to bees maintained in managed hives. There are commercially available comb melting systems for extracting honey from honeycomb and many beekeepers have systems for separating honey from the wax comb. The extracted honey can then be fed to managed bee hives and the wax used for a variety of purposes.

Care of the Bees

Bees typically swarm in the spring. Swarms sometimes occur due to overcrowding in an existing feral nest or managed hive. Some bees leave and others remain in the original cavity. Other times, the entire hive—queen included—will abscond due to lack of food, disease/parasite infestation, weather, or disturbance. The seasonal nature of swarming allows the HBR professional to plan for more removal requests in the springtime. Planning involves preparation of extra bee hives or making advanced arrangements with established apiaries who will accept the new colonies.

If the HBR has arrangements with an established beekeeper to take a colony the list of items needed to receive and transport the stressed bees after a removal includes:

- A bottom board.
- A hive box body.
- An equal number of frames with foundations and without.
- An inner cover and top cover or a migratory cover.
- A Boardman or some other kind of feeder.
- A jar of 1:1 mixture of sugar and water or food frame.
- A ratchet strap for securing the bees hive during transport.

Brood Comb Removal and New Hive Establishment

The certified HBR expert should follow established practices for removing and repositioning the brood comb to resettle the bees as one would do with a feral swarm. It is important to consider minimizing sources of stress to the bee colony caused in the course of conducting a removal. A main consideration is to provide the newly collected bees with food to encourage resettling into a managed condition.

This manual deals with the control of feral honey bee colonies using removal techniques. Honey bees maintained by a beekeeper, commercial or recreational, are considered livestock in Georgia and this manual only discusses what are called "feral" colonies—ones that have absconded from human oversight. There are some situations that may require killing a feral swarm or an established feral honey bee colony. These include swarms or colonies discovered at a U.S. Port of Entry such as the Port of Savannah. Another legally recognized situation could involve a risk to public health. A property owner also can choose to have a honey bee colony eradicated rather than relocated even if killing them is not required. Honeybees are an introduced, domesticated insect species that is not offered protection under state or federal law. Any property owner that eradicates a feral colony on their property also should remove all bees, brood, comb, and honey from the hive.

This control and removal manual is aimed at accomplishing removal without the use of a pesticide. It is important, however, that any HBR professional understand what a pesticide is in case eradication is required or requested.

What is a Pesticide?

People often use the words "insecticide" and "pesticide" interchangeably. However, insecticides are just one specific type of pesticide. The "cide" part of the word comes from Latin meaning "to kill." Therefore, a pesticide kills pests—a broad category because pests could be insects, weeds, pathogens, mites, slugs, rodents, or microorganisms. Attempts to control insects with a pesticide should involve an insecticide. For mites, one would use a miticide, rodents a rodenticide, and microorganisms a disinfectant. An insecticide may also attract, repel or change the normal growth or reproduction of an insect pest. These products are known as attractants, repellants, and Insect Growth Regulators, respectively.

If a situation requires the use of a pesticide, the operator must hold a Household Pest Control (HPC) Certification and License. This certification includes verified competency in the proper methods of storing, mixing, loading, transporting, applying and disposing of pesticides including related laws and regulations.

Pesticides for honey bee control

Property owners and managers can legally attempt to control a honey bee colony with the use of pesticides. These owners/managers are often not trained to properly inspect or identify an established honey bee colony. They also may not have the necessary training and experience to safely and effectively apply an insecticide. For these reasons, the Georgia Department of Agriculture and the Georgia Structural Pest Control Commission strongly recommend that all Georgia consumers consider hiring a licensed HBR operator for a removal or a licensed HPC Operator for an eradication using registered pesticides.

When a situation requires a pesticide application, the HPC Operator must select an appropriate pesticide that is registered with the U.S. Environmental Protection Agency and approved for use to control honey bees and the application site. All HPC applications for eradication of honeybee swarms or colonies must comply with all state and federal requirements including the pesticide label.

Safety is a concern during every bee removal. All parties in the transaction—whether the Certified Honey Bee Control and Removal Operator, residents, and passersby—are at elevated risk to bee stings. The Certified Honey Bee Control and Removal Operator is not liable for stings received before, during or after the removal of a wild nest of honey bees. However, the Operator must understand how to respond in case there is a need for first aid.

Every Operator should be aware of state regulations governing use of epinephrine in case a sting incident requires medical attention. State regulations on epinephrine use can be found at the following website:

https://www.auvi-q.com/public-access/state-laws

Recognizing symptoms of anaphylaxis is an important part of safety mindfulness. A severe reaction to a bee sting often begins with itchiness around the eyes or face followed by symptoms that indicate an anaphylactic response including:

- Difficulty swallowing or breathing.
- Shortness of breath.
- Abdominal pain.
- Chest tightness.
- Cramps.
- Vomiting.
- Wheezing.

These symptoms may be an indication of anaphylaxis that, without treatment, could result in a drop in blood pressure, an increase in heart rate, sudden weakness and unconsciousness.

Call for medical assistance immediately if there are signs of a severe reaction to a bee sting. The Operator should be aware of the potential for a severe reaction and therefore carry an epinephrine injector. There are several injector manufacturers so always read and follow the directions for use.

Personal protection of the Operator is equally important. Therefore veils, gloves and other protective equipment should be used on any removal, especially in areas that have or potentially harbor Africanized honey bees. The Operator must assume that any request for a bee removal involves a colony that has been harassed prior to arrival and that the bees are ready to protect the hive by attacking any intruder.

All businesses with employees are subject to the U.S. Department of Labor Occupational Safety and Health Act (OSHA) and are required to know employer obligations regarding health and safety. Employers must provide a workplace free from safety and health hazards and comply with OSHA rules and regulations. OSHA addresses specific industry hazards in published standards and the size of a business has no bearing on whether compliance officers can inspect a workplace and issue citations. Although OSHA recordkeeping requirements for employee injuries or illness are not mandatory for self-employed Operators or companies with less than 10 employees, it is recommended Operators keep a record of all safety and health training including the completion cards obtained from any of the OSHA Outreach Training Programs:

https://www.osha.gov/training/outreach/overview

Anyone performing bee removals should be aware of trainings and requirements approved by the Occupational Safety and Health Admin-

istration (OSHA) **www.osha.gov** and described in their Standards:

https://www.osha.gov/sites/default/files/publications/osha2254.pdf.

Most OSHA requirements involve application of common-sense practices that an Operator should follow as standard operating procedures regardless of the legal requirements. Completing trainings and following safety recommendations includes being familiar with the instructions provided with all power tools, maintaining and employing ladders or scaffolding in a safe manner, engaging fall protection equipment when appropriate, and following safety recommendations for hoisting and lifting.

Standard operating procedures should include checking all power tools before and after a job to ensure they are operating properly, have proper ground faults, fuel and charged batteries, and look for broken, torn or damaged cords, fuel lines and battery cases. Rigid tools like hammers and prybars should be examined for cracks, bends and deformations. Ladders and scaffolding should be inspected for missing, bent, or loose rungs and supports.

BEEHIVE A box or receptacle with movable frames used by beekeepers for housing a colony of bees.

BEE VACUUM A device designed to suction to collect bees. There are numerous manufacturers and directions on build-your-own designs.

BOARDMAN FEEDER A device for feeding bees that consists of an inverted jar with an attachment allowing access to the hive entrance.

BROOD Developing young honey bees. This includes the eggs, larvae, pupae, and young adults.

CAVITY Any area within elements of construction of a structure that provides honeybees space for residence.

CERTIFIED HONEYBEE CONTROL AND REMOVAL OPERATOR A person who engages in the business of honeybee control and removal without the use of pesticides.

COMB Made up of hexagon cells of wax, this is where honey bees store honey and pollen. This is also where the queen lays her eggs and where the brood will be reared.

CONTRACT A legally binding agreement declaring the exchange of goods and services, that defines the rights and duties between or among its parties and meets the requirements of the GSPCA.

CUT-OUT Any act, process, or method of removing an established honeybee colony from within a cavity that involves alteration to the structure.

DRONE HONEY BEES Male bees. Their purpose is to mate with a queen bee. They do not have a stinger.

ESTABLISHED HONEYBEE COLONY Any colony of honeybees that has established a nest in a cavity within a structure.

FERAL COLONY A colony of honey bees that is no longer managed by a beekeeper.

FREE-HANGING SWARM A mass of honeybees which temporarily cluster on an object.

HIVE The structure used by honey bees as home-base for the colony.

HONEYBEE CONTROL AND REMOVAL The control and removal of an established colony of honeybees from a structure by a Certified Honeybee Control and Removal Operator without the use of pesticides.

HOUSEHOLD PEST CONTROL The use of any pesticide or device to control pests, including birds, that commonly enter structures, nest on or in structures, or invade structures. It does not include the control of mammals with the exception of commensal rodents and squirrels

QUEEN HONEY BEE A fertile female bee specialized for producing eggs.

OPEN AIR HIVE A honeybee colony nest whose removal does not require modification or alteration of the structure.

PEST An insect or other small animal that harms plants, food, property as well as the mental or physical health of people.

PESTICIDE Any substance or mixture of substances used to kill, repel, control or change the normal growth or reproduction of a pest.

REPRODUCTIVE SWARM A swarm event that includes the original queen that leaves the old hive with a portion of workers to start a new colony in a new cavity (hive).

SOCIAL INSECTS Insects that live together in groups, cooperate to forage and raise young, and are separated into castes that perform different duties.

STRUCTURE Any building, regardless of design or type of material used in its construction, whether public or private, vacant or occupied, and adjacent outside areas.

SUPER A large wooden box that holds frames of comb.

SWARMING The process by which a honey bee colony splits into more than one colony. A new queen is made to be left with the hive, and the original queen departs with a portion of the worker bees to find a new place to build a hive.

THREE-DAY RIGHT OF CANCELLATION A form that adheres to the FTC and GFBPA requirements for "Notice of Right to Cancel" or "Notice of Cancellation" in 16 CRF § 429.1.

TRAP-OUT Any act, process, or method of removing honeybees by restricting their reentry leading them to abandon the nest.

UNDER THE DIRECT SUPERVISION OF A competent person who engages in Honeybee Control and Removal acting under the instructions and control of a Certified Honeybee Control and Removal Operator that is present on site during the removal job.

WORKER HONEY BEES Reproductively underdeveloped females that do all the work of the colony.