Title:
Stinging Insect IPM Research, Demonstration and Outreach Project, NYS IPM Program, 2004.

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Project locations:
Suffolk County, Westchester County, Ontario County.
Research from this project can be applied to the Northeastern US.

Abstract:
Stinging insects are a high priority pest in the community landscape due to their potential threat to human health and their attraction to human activity and man-made structures. New York State IPM Program specialists and other Cornell extension scientists have made efforts to promote IPM and least-toxic management practices for stinging insects in 2004. A research project tested the effectiveness of baited traps placed at the perimeter of a space in preventing wasps from entering the perimeter. Results indicated that traps were somewhat attractive and may increase wasp activity. Another project was designed to test the theory that sky blue paint acted as a nest-building deterrent for paper wasps. Results were mostly negative, with the exception of one study. There may be a reason to continue to investigate this idea. Additionally, outreach was accomplished through the development of a fact sheet on acceptable least-toxic management of stinging insects and a PowerPoint slide presentation that was used on several occasions.

Background and justification:
Stinging insects are among the most dangerous of all community or urban-type pests because of their numbers, aggressiveness, tendency to nest near human habitation, and their venom, which can cause serious allergic reactions or death in some individuals. Stinging insects pose special problems when they infest schools or places where children spend time, because children are often oblivious to their presence and in many cases it is unknown whether children who have never been stung are going to have a serious reaction to the venom. Additionally, any person can develop a serious allergy to wasp venom later in life, so stinging insects pose a threat in any public place.

The standard procedure for managing stinging insects is knockdown using a canned pyrethroid spray. We have attempted to find alternatives to sprays, which cannot be used in every situation. In addition, we have attempted to find ways to reduce stinging insect numbers in public places through the use of sanitation, trapping, and mechanical removal. Research and demonstration efforts in 2004 included 1. Testing the effectiveness of using baited wasp traps at the periphery of an area to reduce wasp numbers inside the area; and 2. Using sky blue paint as a nest

site choice deterrent. Outreach was accomplished through the publication of a fact sheet titled "Acceptable Treatments Guideline for Stinging Insects, 2004" online for Westchester County's Pest Management Committee. Outreach was also achieved with the development and use of a PowerPoint presentation about stinging insect IPM.

1. Experimental and Applied Testing of Yellowjacket Trapping Efficacy in Upstate New York; Summary of Work to Date
Lynn Braband, NYS Community IPM Program of Cornell University

Stinging insects, especially yellowjackets (*Vespula* and *Dolichovespula* spp.), are among the most frequent and persistent pest problems at schools, parks, and similar locations. Yellowjackets are also common hazards at late summer and early fall outdoor festivals.
One approach to reducing the risk is the use of baited container traps. Large numbers of yellowjackets can be caught in such traps. Whether the traps actually reduce the risk of being stung has not been experimentally tested. For four years, we have tested the premise that trapping around a periphery of a plot will reduce the number of yellowjackets in the center of the plot. The assumption was made that the fewer the yellowjackets, the less the risk of being stung. We have also been comparing the results of our tests to applied use at community festivals and school playgrounds.

During the first three years (2001-2003) of the project, our study design consisted of two plots several hundred yards apart from each other in open fields. Each plot was a square 100 feet by 100 feet. Trapping stations were established at twenty-foot intervals around the perimeter of each plot. Each station consisted of a 10-foot length of 3/4-inch conduit pipe driven into the ground. Yellowjacket container traps were attached to the top of these poles. Each plot also had a triplet of trap stations in the center. During a two-week long testing trial, traps were maintained on all poles (periphery and center) on one plot but only on the center poles in the second plot. Plots were alternated from trial to trial. In other words, in the first trial, Plot A had traps on both the periphery and center while Plot B had traps only in the center. In the second trial, Plot A had traps only in the center while Plot B was trapped on both the periphery and center. In the third trial, the plots were switched again and so on for a total of four or five trials per year.

During the 2004 field season, we adjusted the trapping trials to more closely mimic how the traps are actually used. During the first week of each of the three two-week trials, only the periphery traps on one plot were set. During the second week, the center traps were added on both plots. This more closely matched the practice of starting to trap yellowjackets one week before a festival (represented by the center traps) started.

In 2001 and 2002, the trapping trials were conducted at the same locations at the NYS Agricultural Experiment Station in Geneva, NY. In 2003 and 2004, the locations were changed to private land near Canandaigua, NY. In all four years, the trials were started in August and extended into October.

By far, the largest majority of the stinging insects caught in the traps were *Vespula* yellowjackets, and only this data has been analyzed. Other plentiful species included the bald-faced hornet (*Dolichovespula maculata*), paper wasps (especially *Polistes dominulus*), and the European hornet (*Vespa crabro*). In addition, a potpourri of other stinging insects were also caught in small numbers.

During the first three years, captures of yellowjackets started slow, peaked in September, and dropped off rapidly in October. Although never significantly different (Stuent's T-test, $P<0.5$), more yellowjackets were caught in the center traps in plots without peripheral traps than in the center traps in plots with peripheral traps. This may indicate a trend for the peripheral trapping to reduce the number of yellowjackets inside the plots. In the first and third years of the study, number of yellowjackets trapped declined once the peripheral traps were switched and gradually built up as each two-week trial progressed. Possibly yellowjackets were homing in on the plot with the most traps and took awhile to change their behavior once the peripheral traps were moved. If so, this would indicate that the traps were attracting, and not just merely intercepting, yellowjackets.

Results in the 2004 trials were more variable. The most consistent finding was evidence again that the traps were attracting yellowjackets to the plots.

Trapping yellowjackets for the purpose of reducing stinging risks at community festivals has been done in at least two locations in upstate New York. Cayuga County has been trapping at two annual events in Emerson Park for at least five years (Bruce Natale, Cayuga Co. Planning Office, personal communication). Trapping at the Clothesline Art Festival in Rochester, NY has been conducted for three years (Peter Castronovo, University of Rochester, personal communication). In both situations before the use of the traps, the number of instances of first aid administered for stings was described as "numerous". Concurrent with trapping, such cases were noticeably reduced, usually to less than six.

In 2000 and 2001, we experimented with the use of traps at two school districts, one each in Albany County and Livingston County. The traps were placed around elementary school playgrounds. We compared trapped playgrounds to non-trapped playgrounds in both districts by regularly surveying for stinging insect nests and surveying teachers and school nurses about known or perceived risks. Collectively over both years and both school districts, almost 10,000 stinging insects were captured. The vast majority (98%) was *Vespula* yellowjackets. However, we have real questions whether we reduced the risk of being stung at the playgrounds, especially given the previously mentioned evidence that the traps attract yellowjackets.

To conclude and based on our current results, the best use of yellowjacket traps is probably when there already exists a strong attractant, such as concession stands, for yellowjackets. I would not recommend using the traps if such attractants do not exist

which is the case for many playgrounds. For festivals, the recommended procedure is to start trapping one week before the festival begins and continue trapping through the duration of the event. Traps will need to be regularly serviced, possibly daily, while they are up.

2. Sky Blue Paint as a Deterrent for Nest Building of Paper Wasps (*Polistes* spp.).

Paper wasps (*Polistes* spp.) are an extremely common inhabitant of the community landscape, with a strong tendency to build nests in and around man-made structures. Although their population numbers per nest are not as great as yellowjackets, paper wasps can be very aggressive in their defense of the nest. Paper wasps pose a significant threat to human health when nesting occurs in areas frequented by people, particularly children, who may tend to disturb wasps more due to lack of awareness.

In the Florida Keys, it is fairly common for residents to paint porches and eaves a sky blue color, based on the belief that the wasps are discouraged from nesting on surfaces painted this color. The theory is that wasps see the color of the sky and not the surface of a porch or eave and therefore do not consider the surface suitable for nesting. At the request of an employee of Con Edison, Inc. (New York, NY) a group of Cornell extension scientists decided to study this idea by obtaining sky blue paint and using it to prepare nest sites with and without the blue color, to compare the nesting frequency of Polistes in each color site.

Work began in 2003 in several locations around New York State. Researchers painted the inside surface of 6" disposable plastic planting pots and hung them on buildings alongside unpainted black pots. They also painted sections of eaves of several buildings and left others unpainted to observe nesting behaviors. Results were negative for the deterrent effects of sky blue paint for 2003. Several issues were raised about the performance of the study in 2003. Unexpectedly, some locations showed no evidence of nest building, in normally high activity areas. Reasons for this could be that in locations on Long Island, the study was initiated after peak nest-building time, and therefore result s may have been compromised. Also, the odor of fresh paint may have deterred all nesting. It was concluded in 2003 that no evidence was gathered to support the deterrent effects of sky blue paint. However researchers decided to let the experiment run for the 2004 season. This would allow the observation of earlier nesting and may reduce deterrence of painted areas due to odor.

In 2004, there were no nests observed in any of the painted or unpainted pots. It appears that pots attached to buildings are not a suitable nesting site for paper wasps. However building eaves at the Suffolk County Educational Farm that had been alternately painted blue or not painted did appear to show trends in second season mid-spring nest establishment of paper wasps. The majority of nest initiation sites (5 of 6 nests) were located in non-blue eaves. While this trend may suggest that further investigation is worthwhile, these data are not sufficient for analyzing statistically, because they were the only data available.

3. Stinging Insect Fact Sheet developed for Westchester County Pest Management Committee

In 2004, Jody Gangloff-Kaufmann was asked to create a document outlining acceptable treatments for stinging insects based on the pesticide phase out legislation of Westchester County, NY. A fact sheet was developed that describes the major types of stinging insects, the risk category for each (high, medium or low), and cultural, mechanical, and chemical (least-toxic) means of management. The fact sheet is titled "Acceptable Treatments Guideline for Stinging Insects, 2004". This document is available to anyone for publication on a website or distribution as needed. Please see Appendix A for a copy of this fact sheet.

4. Development of PowerPoint Presentations for Outreach of Stinging Insect IPM

In 2004, IPM staff members developed and utilized several versions of a PowerPoint presentation focused on IPM for stinging insect management. Much of the information presented was gained during the four years of stinging insect research and demonstrations conducted by the stinging insects team. PowerPoint slide sets (electronic versions) are available to educators as needed.

Appendix A.

Acceptable treatments guideline for stinging insects 2004 Westchester County, NY

Section 1. Introduction to stinging insects and their risks

A. High risk - Paper nest building (social) wasps

Wasps of the family Vespidae include the yellowjackets, hornets, and paper or umbrella wasps. All groups are known for building a papery nest structure of chewed up cellulose materials collected while foraging. All nests are composed of paper combs, some are single and exposed, and others are built in tiers and wrapped in a paper envelope. Most combs are constructed in protected areas and voids, in shrubs and trees, and several species build colonies under ground. Colony defense behavior is intense for most paper nest building wasp colonies. Therefore, when in close proximity to humans or structures, colonies must often be eliminated. It should be noted, however, that colonies located away from human activity or high in trees should be spared, because Vespid wasps serve an important ecological role as predators of unwanted insects.

Yellowjackets and baldfaced hornets

Yellowjacket colonies can become enormous by late summer. Colonies can have thousands of workers, and become obvious to the onlooker because of the number of workers coming and going. Baldfaced hornets are not a true hornet species, but a larger species of yellowjacket. Their colonies are not as large as other yellowjackets, achieving a population of only a few hundred members. The baldfaced hornet is also the only member of this family with black and ivory coloring.

All members of this group build nests enclosed in paper envelopes. Yellowjackets tend to choose voids in structures and the ground for nest building, and will excavate when more room is needed. Baldfaced hornets will build large grayish free-hanging paper nests in shrubs, trees, and on the sides of structures.

Paper (umbrella) wasps

Common paper wasps of the genus *Polistes* are often called “umbrella wasps” because of the style of the nests. Combs are usually visible, hanging upside-down in a protected area but not wrapped in an envelope. Colonies may grow to only a few dozen members. All members are equally aggressive and will defend the colony vigorously. If the dominant egg-laying female (“queen”) disappears, another female will quickly take her place. Most

species of *Polistes* are brown and gold in color, but one species resembles a yellowjacket with yellow and black markings.

European hornets

This is the only true hornet to be found in New York State. They are uncommon in urban areas, and prefer rural farmland, orchards, and old barns. Their nests resemble those of the baldfaced hornet but are usually reddish in color. European hornets prefer hollow trees and abandoned structures for nest building and are aggressive when provoked. The coloring of these wasps resembles a cicada killer, with gold and brown markings. Colonies grow to a few hundred members.

B. Moderate risk – Bees

Bees are closely related to wasps but differ in some important biological and ecological ways. Bees thrive on pollen and nectar, rather than predating on insects, as wasps do, and therefore serve a crucial role as pollinators. Bees have longer and denser pile (hairs) on their bodies. Social bees that build large brood nests use wax produced by their bodies rather than paper for constructing combs. Bees readily defend their colonies but are not as aggressive as wasps. Solitary bees, such as carpenter and ground-nesting bees, live alone, do not build large nests, and rear only a few young.

Honeybees

Honeybees build large colonies that survive the winter. Colonies commonly swarm and seek new shelter, and will inhabit structural voids in buildings. They can be very aggressive but can also be handled easily by a trained keeper. Honeybees are important and should be protected as much as possible. Many beekeepers are willing remove a structure-infesting colony.

Bumblebees

Bumblebees have small colonies that occasionally become a problem in areas of human activity. They are unlikely to sting and mostly non-aggressive, but will cause a panic in frightened individuals due to their large size and activity. Bumblebees build nests in voids and old mouse burrows in the ground.

Carpenter bees

Carpenter bees are solitary insects that bore tunnels into the wood of trees or structures to create galleries for egg laying. They can do considerable damage to a wood structure through years of gnawing tunnels. Wood then becomes weakened and susceptible to rot. Although carpenter bees may appear aggressive, it is the males defending territory that most people encounter. Males cannot sting and pose little threat to humans. These bees look like very large bumblebees, with furry stout bodies, but are not social like bumblebees.

Ground-nesting bees

Many species of solitary ground nesting bees can be found in dry sandy areas of parks and golf courses. It may seem as though the bees exist in one large colony, however these

bees create their own burrows in the soil and work alone. In an optimal nesting area solitary bees will tolerate their neighbors giving the viewer the impression of a large colony. Males are most frequently encountered as they defend territory in hopes of mating with females that are burrowing and laying eggs.

C. Low or no risk – Solitary hunting wasps

Solitary wasps are hunters and, like solitary bees, rear only a few young in burrows or galleries that are dug or created. Many solitary wasps are parasites on other insects. All are beneficial in the environment and should be conserved, if possible.

Cicada killer wasps

Cicada killer wasps are among the largest wasps to be found in New York. Females dig burrows for egg laying and provision their young with cicadas that have been collected and paralyzed with a sting. Males guard territory and appear dangerous, but like other solitary wasps and bees, male cicada killer wasps are only bluffing and cannot sting. The stinger of a female wasp is blunt and mainly not used in defense. Cicada killer wasps, although solitary, may appear in large numbers in favorable nesting spots, posing problems for parks managers. Public perception of such large wasps is negative (fear) and cicada killer wasps create mounds of soil in turf areas or excavate soil from between stones in stone walls. If not posing a serious problem, they should be left alone.

Scoliid wasps

Scoliid wasps are uncommon but can suddenly cause problems in the landscape when they do appear. They are robust, black wasps that are found around white grub infested turfgrass and can be seen flying close to the ground on athletic fields in mid summer. These wasps lay their eggs on white grubs and therefore serve a useful purpose for the turfgrass manager. Scoliid wasps rarely sting but cause panic for those in and around the infested field. The key to managing Scoliid wasps is to effectively manage white grubs.

Mud daubers and potter wasps

Both of these types of wasps are good predators and not a threat to human health. They create mud cups and tubes where eggs are laid and provisioned with insects. They look delicate with long legs and wings. These wasps vary in color and size.

Spider wasps

These wasps are thin with long legs, and usually black with metallic tones of blue and violet. They can be a long as an inch. Their characteristic behavior includes flitting the wings when walking on a surface. Spider wasps prey on spiders (they even look a bit like spiders) and provision their larvae in underground cells with prey.

Table 1. Quick identification of bees and wasps.

Type	Physical description	Nest type	Risk level
Yellowjacket	Yellow and black stripes, _ - _ in., few hairs, blunt abdomen at waist	Multilevel paper combs with envelope; structure and ground voids	high
Baldfaced hornet	Ivory and black stripes, _ in., nearly hairless	Multilevel paper combs in gray envelope, ball shaped, in shrubs and trees	high
Paper or umbrella wasps	Yellow and black stripes or gold and brown/black, hairless, rounded abdomen at waist, long legs	Umbrella paper nest with visible comb, often under eaves or in protected spots	high
European hornets	Gold and brown/black, some hairs, nearly 1 inch	Multilevel paper combs in gray envelope, ball shaped, in abandoned structured or hollow trees	High if encountered
Honeybees	Gold and brown, honey colored, fuzzy	Large social colonies in voids	Medium
Bumblebees	Yellow and black or all black, fuzzy	Small social colonies in voids	Medium
Carpenter bees	Large black with some yellow hairs on thorax, black abdomen	Solitary, males guard nest holes, females dig holes	Medium to low
Ground nesting bees	Variable black and yellow to orange, usually with hairy bodies	Solitary but in groups, nests are holes in sandy soils	Medium to low
Cicada killer wasps	Large (almost 2 inches) black and yellow with brown stripes	Solitary, males guard nest holes, females dig holes	Low
Scoliid wasps	Large (over 1 inch) black wasps with 6 or so yellow spots on abdomen	Solitary, females fly low over turf looking for grubs	Low
Mud daubers and potter wasps	Thin, delicate, various colors, including metallic and brown/gold	Solitary, nests constructed of mud into tubes, pots, or mounds on vertical surfaces	Low
Spider wasps	Thin, leggy, spider-like and black with metallic blue-violet sheen	Solitary underground nest cells	Low

Beneficial aspects of bees and wasps must be taken into consideration as control measures are chosen. Most bees are significant pollinators of fruit, ornamentals and vegetables. Without them, food would be scarce. Nearly all wasps are predators or feed in some way on other insect species. Yellowjackets, paper wasps, hornets, and many solitary wasps are predators of soft-bodied caterpillars that feed on desirable plants in our gardens and landscapes. Yellowjackets can have a great impact on pests in agricultural fields, reducing the need for pesticides. Cicada killer wasps, while often a nuisance in the landscape, help protect trees by harvesting cicadas that damage the growing tips of branches. Control of bees and wasps should be undertaken when a true threat exists or the nuisance they cause is intolerable.

Section 2. Physical controls for stinging insects

A. Monitoring and scouting

Beginning in early June, staff should walk the perimeter of all buildings to scout for wasp activity. Established honeybee colonies in structures will be evident as early as late March. Paper wasp nest initiation begins in June and peaks in July. Paper wasps can be very active through late September. Yellowjacket colonies may go unnoticed until late July, but can still be identified through scouting. Check along the roofline of buildings using the sky as a backdrop. Look for wasps coming and going along eaves, in doorways, around windows, and along the foundation. Paper wasp nests are sometimes visible in protected overhangs, but may be hidden inside loose voids. Yellowjacket nests are usually built in tighter voids.

Structures, such as fences, seating, playground equipment, bicycle racks, and other items in the landscape will also need to be scouted for wasp activity. Paper wasps will build small nests in fence pipes and hollow tubes of playground equipment, under bleachers and seats, and in any protected location, especially made of metal or wood. Plastic is not as attractive. Playground equipment is often made of hollowed out logs with chains. Be especially aware of wasp activity in such structures. Aerial yellowjackets, an extremely aggressive species, can build large colonies in small spaces, such as a hollow log.

B. Sanitation and food removal

Bees typically feed on flower nectar and pollen and do not present a problem around food or garbage. Wasps, especially yellowjackets and paper wasps, are scavengers, and will forage at food service areas and garbage containers. The food preferences of social wasps change over the course of the season from protein early to sugar later on. Covered garbage containers are necessary to reduce foraging. Power-wash dumpsters with soapy water, each time they are emptied. Try to replace dumpster lids and keep them closed. Bag all garbage in good quality sealable bags to prevent spills. Hose off mike crates after a delivery if they must stand outside. Around food concession areas, install juice traps that are refreshed with fruit punch or pineapple juice (try different baits) every morning. Place traps a few feet away from the food area. Clean up any soda spills quickly. Keep food and garbage covered.

C. Nest removal and exclusion

Using a pole or a power-washer, remove visible paper wasp nests from eaves and structures every two weeks from June through July. Wear protective clothing or a bee suit if you are sensitive to stings. Yellowjacket nests in voids cannot easily be removed without tearing down a wall. However to reduce foragers removal is an option. Once a void nest is located, staff should locate all possible entrances and seal up all but the main entrance using caulk or hardening foam. Hold a vacuum cleaner wand near the open entrance for an hour or secure it to a ladder and walk away. The traffic in and out of the

entrance will be collected by the vacuum, which can then be sealed with tape (at the end of the hose) and placed in a black plastic bag in the sun. Alternatively, use the suction to collect a small amount of sand, diatomaceous earth, or an approved insecticidal dust, and then seal the hose end. Leave the vacuum for two days and all wasps will perish. This can be repeated once a week to reduce a problem, or combined with an approved insecticidal dust to minimize dying insects inside the void.

Exclusion of wasps from equipment and fences can be done mid-season. Use hardening/expanding foam to fill small voids where nest building occurs. DO NOT attempt to seal up structural void nests during the middle of the season, or you will force wasps inside the structure and present a serious hazard to building occupants. Structural voids must be sealed during the winter months to assure that no live wasps are trapped inside. Use temporary fixes, such as steel wool or hardening foam when need be, but consider making permanent fixes in municipal structures, such as filling access points to voids with concrete and replacing warped wood. Metal flashing on buildings must be pinned down and secured to eliminate spaces where paper wasps nest.

D. Trapping

Trapping, using food-based attractants, has its uses in food areas. Traps should be placed a few feet away from food service areas and must be cleaned and refreshed every day. Bait varies from fruit punch, to pineapple juice, to beer. Try different baits to see which one works best at that particular site. Several types of traps are available. They mainly work the same way. To improve the effectiveness, smear a layer of petroleum jelly around the rim about 1 inch wide. This will prevent wasps from climbing up the side and out of the jar. To make a homemade trap out of a 2-liter soda bottle cut off the top, invert it and tape it back into the bottle, making a funnel. Punch 3 pen-sized holes in the sides and fill the trap with baited liquid. These may be useful on rooftops or other inconspicuous places, but must be cleaned or disposed of regularly.

Section 3. Acceptable chemical pesticides for control of stinging insects

Chemical pesticides, whether conventional or least-toxic, must be used with caution when dealing with bees and wasps. Honeybees are often protected and should only be eliminated when their colonies pose a threat to humans. Protective gear must be worn when using an insecticide spray or dust on a colony of wasps. Pyrethrins and pyrethroids are irritating to wasps and can cause aggressive swarming. EcoPCO plant oils are repellant and can cause a colony to become agitated as well. When treating a wall void nest in a structure used by people, first make sure that wasps have no entrance from the void inside the building, into drop ceilings, vents, ducts, or rooms where people are working. If you can confirm this (you see no dead wasps in windows or inside drop ceilings or light fixtures, treat the colony in the **evening** when staff have gone home and wasps have returned to the colony. Dusts work best for voids. If you believe that wasps may have access to the inside of the building, treat from the inside out, or treat from the outside when the building will be unoccupied for two or three days. Do a follow up visit to check the rooms, windows and drop ceilings for live wasps **before employees return**.

Table 2. Acceptable chemical treatments under Westchester County Local Law 22-2000

Product trade name	**Active ingredient(s)**	**EPA Reg. #**	**Uses**
EcoPCO ACU (aerosol spray)	2-phenethyl propionate	67425-14	Spray for use on visible paper wasp and yellowjacket nests, wear protective clothing, can be used from indoor point on void nests, unscented
EcoPCO Exempt Dust	Eugenol, 2-phenethyl propionate	Exempt from EPA labeling	For void nests, treat from inside the building if possible, treat in early AM or at night, wear protective clothing, can be used on ground nests
EcoPCO Exempt IC (for use in sprayer)	Rosemary oil, wintergreen oil, mineral oil	Exempt from EPA labeling	Strong scent – to be used outdoors for wasp nests, may be repellent
EcoPCO Jet (aerosol spray)	Eugenol, 2-phenethyl propionate	67425-5	Spray for use on visible paper wasp and yellowjacket nests, wear protective clothing, can be used from indoor point on void nests
PT 515 Wasp Freeze (aerosol spray)	d-trans allethrin, synergist	499-362	Spray directly on wasps, yellowjackets, carpenter bees, in and around structures and on nests, wear protective clothing
PT Cy-Kick (aerosol spray)	cyfluthrin	499-303	Spray directly on wasps, yellowjackets, carpenter bees, in and around structures and on nests, wear protective clothing
PT Perma-Dust	Boric acid	499-384	Carpenter bees, applied to nest holes
Victor Poison-Free Aerosol	Mint oil and soap	Exempt from EPA labeling	For use on visible nests and wasps

J.L. Gangloff-Kaufmann. 2004. NY State Community IPM Program, Cornell University. Written for the Pest Management Committee of Westchester County, NY.