

# PCT

PEST CONTROL TECHNOLOGY

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# ANNUAL ANT CONTROL ISSUE

SURGICAL STRIKES VS.  
NUKE 'EM TILL THEY GLOW  
WHICH APPROACH IS BETTER?

DO YOU KNOW  
WHERE YOUR PARENT  
(COLONIES) ARE?

ANSWERS TO SOME  
COMMON ANT QUESTIONS

ANTS & THEIR ANTECEDENTS

TERMITICIDE  
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# SURGICAL STRIKES

CARPENTER ANT INFESTATIONS CAN BE ATTACKED BY SATURATING THE PERIMETER AND VOIDS OF A STRUCTURE, OR BY FINDING THE MAIN AND SATELLITE NESTS AND THEN TARGETING THE TREATMENT THERE. THE LATTER METHOD, THOUGH MANY PCOs BELIEVE IT IS MORE DIFFICULT, IS FAR MORE ENVIRONMENTALLY ACCEPTABLE AND ECONOMICALLY EFFICIENT.

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**T**here are two methods of carpenter ant control practiced by the pest control industry today. These divergent strategies are differentiated by the ability of the PCO to locate the carpenter ant nest(s). In the first strategy — which we call “nuke ‘em till they glow” — the perimeters and voids of the infested structure(s) are saturated with insecticide residuals or dusts in the hope that control will be achieved through attrition as foraging ants are killed after contacting the insecticides. The alternative — “surgical strikes with no collateral damage” — emphasizes a thorough inspection to pinpoint the nest site(s) and areas where ants gain access to the building, so that targeted insecticide applications can be made.

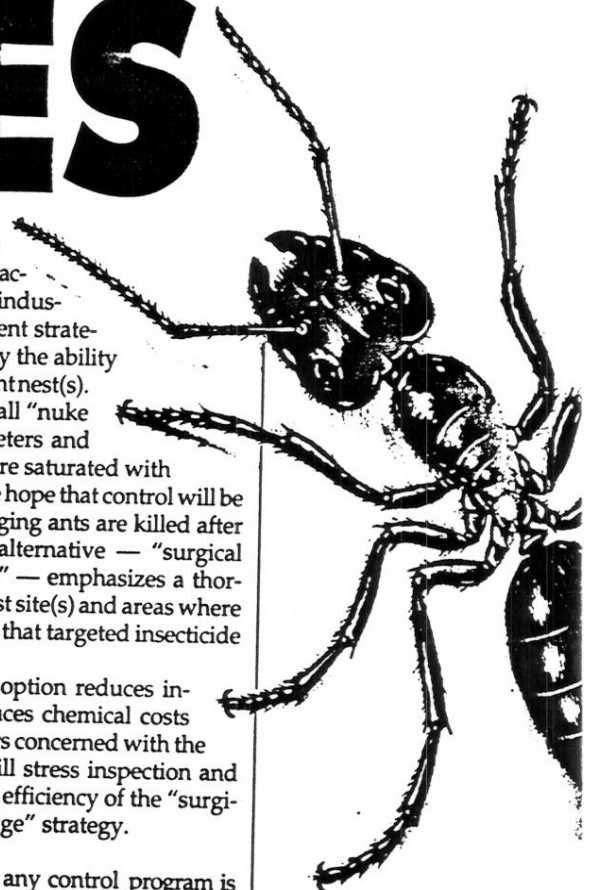
Because the “surgical strikes” option reduces insecticide usage, this strategy reduces chemical costs and is more acceptable to customers concerned with the environment. In this article we will stress inspection and the pragmatic sense and economic efficiency of the “surgical strikes with no collateral damage” strategy.

**IDENTIFICATION.** The first step in any control program is correct identification of the pest. There are numerous species of ants a pest control operator may encounter. To identify them, we conducted a survey in cooperation with Viking Termite & Pest Control, Bridgewater, N.J., for a six-month period beginning in January 1993.

The three most common pest ant species encountered (in decreasing order of frequency) were two carpenter ant species, *Camponotus pennsylvanicus* and *C. nearcticus*, and the pavement ant, *Tetramorium caespitum* (see pie graph on page 38).

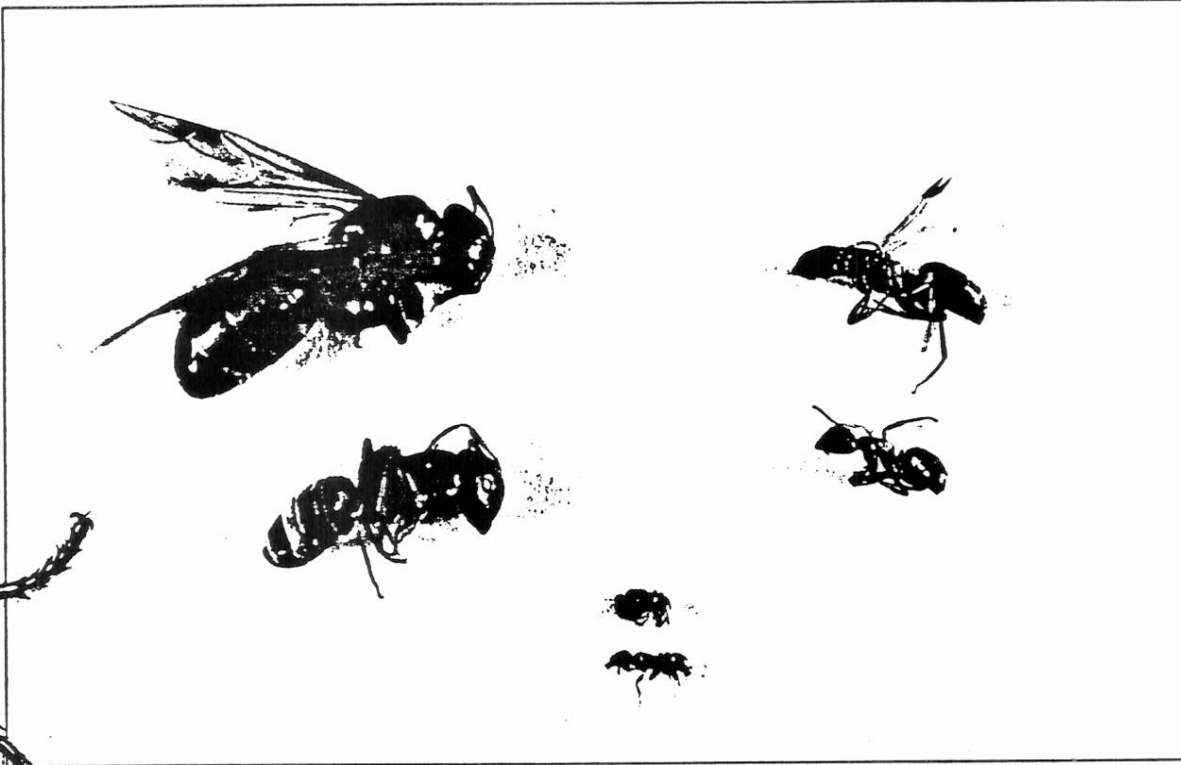
These three species are easily distinguished (see photo at top right). Carpenter ants are differentiated from other species by a number of features. Short descriptions of these features follow. (Singularly these features are not sufficient for positive identification, but collectively they can be used to separate carpenter ants from other pest ants.)

- **Size.** Although carpenter ants are usually larger than most other ant species encountered by PCOs,

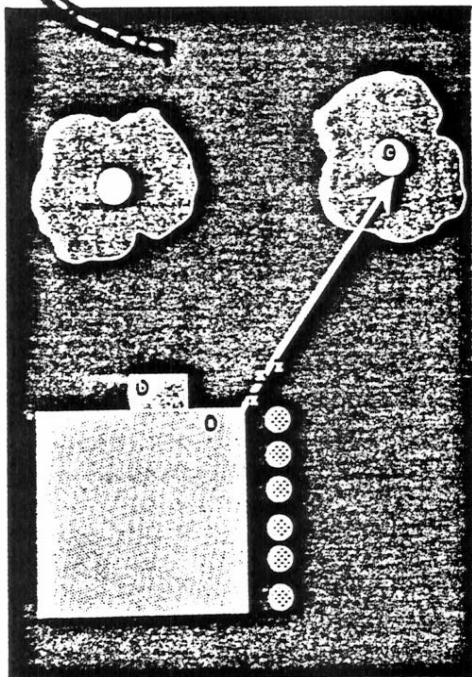


A continuous size range of workers in the black carpenter ant, *Camponotus pennsylvanicus*.





The three ants most commonly encountered in a recent survey conducted by the authors in New Jersey. Top left: *Camponotus nearcticus*. Top right: *Camponotus pennsylvanicus*. Bottom: *Tetramorium caespitum*. The two *Camponotus* (carpenter ant) species are found primarily in the eastern United States. *T. caespitum*, the pavement ant, is found primarily in the East and Midwest.



An example for locating the main nest. The homeowner has seen carpenter ants in the laundry area (a) just off the back porch (b). Upon inspection, the PCO finds a number of workers. By observing them and marking their positions (the Xs), he can determine the direction of the trail. Extending a straight line, he finds that these ants come from a nest in one of the trees (c) in the back yard.

size alone is not a definitive characteristic. A carpenter ant colony may have a continuous size range of workers (see photo at far left). However, major workers of *C. pennsylvanicus*, the most common carpenter ant species in New Jersey, are very large.

- **Color.** Both carpenter ant species common in New Jersey are dark. *C. pennsylvanicus* is black; *C. nearcticus* varies from dark brown to black (see photo above).

- **Pedicel.** A carpenter ant's pedicel (the "waistline" area between the thorax and abdomen) will have only one node, or bump.

- **Shape of the thorax.** In carpenter ants the upper surface of the thorax, in profile, is evenly rounded and smooth; in most other ant species the thorax will have a more jagged appearance.

The pavement ant is small, dark-colored and has two nodes on the pedicel. The top of the head has a lined appearance, and all the workers are the same size.

**INSPECTION.** Correct ant identification will help focus the inspection. Pavement ants nest in the soil, and workers enter the structure through expansion joints or cracks in the slab. With carpenter ants, the main nest (where the queen and most of the brood and workers live) is often located outside in a tree. Carpenter ants commonly establish satellite nests, consisting of workers and some brood,

which remain in contact with the main nest through a network of odor trails. These satellite nests can appear practically overnight inside a building!

Satellite nesting behavior makes carpenter ants an extremely difficult pest to control. If you don't find and destroy the main nest, the colony may persist and the infestation can become chronic. Because of the cryptic nesting habits (e.g., in tree holes, in wall voids) of carpenter ants, finding the nest(s) can at times seem impossible. Carpenter ants are opportunistic in their nesting habits. They will exploit pre-existing cavities, and as a result they don't have to expend energy excavating a new one. They commonly establish nests within insulation, both foam panels on foundation walls and fiberglass blankets between rafters in attics or crawl spaces.

Some common nest sites used by carpenter ants infesting structures in the Pacific Northwest are listed in Table 1 on page 38. While these data are for a different carpenter ant species, *C. modoc*, the nest sites will probably be similar for *C. pennsylvanicus* and *C. nearcticus* in New Jersey, as well as other carpenter ant species in other areas of the country. These data stress the importance of trees in locating the nest(s) outside the structure. More than 50% of the colonies were nest

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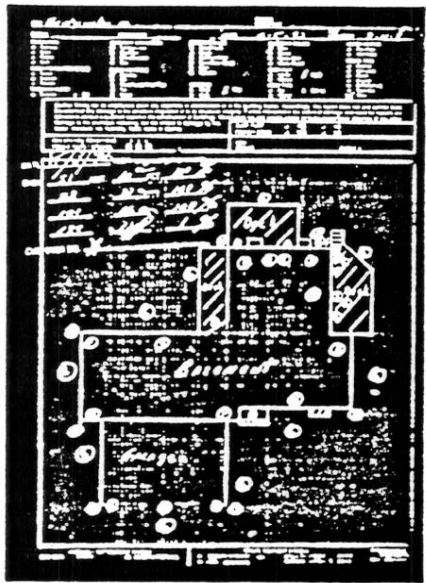
# SURGICAL STRIKES

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ing in trees in a forested area adjoining the property, or in trees or stumps in the yard. Most nests within the structure were found in the outermost parts of the building.

In our survey, the vast majority of customers contacted a pest control service for carpenter ants because foraging workers were a nuisance in or around the house, and not because of structural damage. Therefore, in many cases you may find no sign of infestation other than the complaints concerning worker ants. However, the customer can probably direct you to key locations of activity, thereby providing you a vital lead for a successful inspection.

**STRAIGHT SHOOTERS.** When foraging ants are found in or around the structure,



Left: An inspection diagram for a carpenter ant infestation indicating areas to be treated. The circled numbers indicate the treatment procedure for that location. A key describing the various treatment procedures may be attached to or placed on the back of the diagram.

locate a stable food source, they create permanent trails on which workers travel. These trails are always straight, except when interrupted by a sidewalk or other structural feature.

To use workers to find the nest(s), first locate foraging ants around the structure, and note the direction they are walking. The nest can be found by fixing the location of several ants over a distance of about three feet. Then, simply extend a straight line from the positions of the ants and look into the distance for a tree, stump, or other likely nest site (see diagram on page 33).

In our experience, this system has proven extremely reliable; we nearly al-

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observe their trailing behavior, because it can often lead you to the nest. When carpenter ants establish a satellite nest, or

## CARPENTER ANT NEST SITES

LOCATION OF NESTS OUTSIDE STRUCTURE	NUMBER OF OCCURRENCES	FREQUENCY (%)
A forest within 50 meters of the structure	26	27.1
Nest site could not be found	21	21.9
In tree(s) in the yard	16	16.7
In a stump or dead tree in the yard	15	15.6
In buried wood on the property	8	8.3
In landscape timbers	7	7.3
In firewood	3	3.1
In stacked lumber	3	3.1
There was no nest located outside	3	3.1

LOCATION OF NESTS INSIDE STRUCTURE	NUMBER OF OCCURRENCES	FREQUENCY (%)
In an exterior wall void	34	35.4
In the attic	20	20.8
In the flooring or subflooring	18	18.8
In the ceiling	18	18.8
There was no nest located inside	14	14.6
In an interior wall void	9	9.4
In the roofing	3	3.1
In sill plates or foundation piers	3	3.1
In stacked lumber	3	3.1
Nest site could not be found	3	3.1

Table 1. Nest sites of *Camponotus modoc* in Washington State. Based on the analysis of numerous carpenter ant infestations in structures as reported by Drs. Laurel Hansen and Roger Akre of Washington State University ("Biology of Carpenter Ants in Washington State," *Melanderia* 43:1-61 [1985].)

# SURGICAL STRIKES

(continued from page 36)

ways find nest sites from which ants originate, and it is much quicker than following ants over the entire length of their trail. Because large numbers of foragers make it easier to determine the direction of the trail, this inspection technique works best at night, when carpenter ants are most active.

**ADDITIONAL SIGNS.** Besides foragers, other signs of infestation can help locate

the nest site. PCOs have reported the most common sign of infestation was worker ants, and the second most common sign was swarmers. Finding swarms inside a structure indicates the presence of an interior nest. Swarmers will frequently be found around window sills because they tend to fly toward light once they leave the nest.

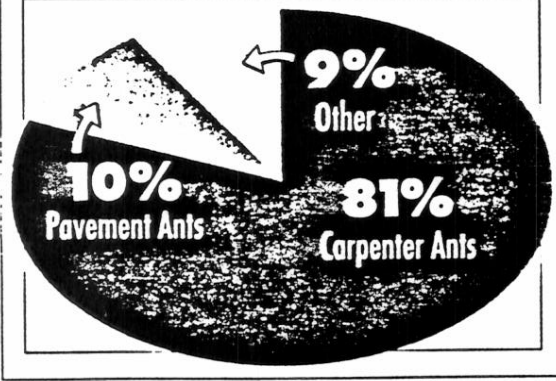
The importance of thorough documentation during an inspection cannot be over-emphasized. Documentation is an important tool for customer education, identification of the key areas of infestation for service technicians, and protection against possible future litigation. The most important part of the documentation process

for a carpenter ant inspection is a diagram of the site (see sample diagram on page 36). As in termite inspections, an accurate graph of the floor plan is drawn to scale. With carpenter ants, because of the importance of trees and wood products as nest sites, the inspection diagram should also include the landscape surrounding the structure.

In the inspection diagram, all conditions conducive to infestation should be noted. The conditions conducive for carpenter ant

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## FREQUENCY OF STRUCTURAL PEST ANTS



Carpenter ants were the species most often encountered.

# SURGICAL STRIKES

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infestation in the Pacific Northwest are listed in Table 2 at right. The importance of trees and other wooden elements in the landscape are evident in these data. Of equal importance to note are locations where wood in the structure is in contact with the soil, or locations where vegetation has overgrown and is now in contact with the structure. Excessive moisture is also a precursor of carpenter ant infestation, because the ants are attracted to moist areas for nesting. All conditions conducive to an infestation need to be brought to the homeowner's attention, along with recommended remedial actions to correct these conditions.

Lastly, areas of active carpenter ant infestation, as well as old damage (this is important for legal reasons), should be thoroughly noted in the inspection report. For thoroughness of the written records, the inspection report should also indicate the treatment techniques used in the control program. On the sample floor plan on page 36, the treatment specifications are indicated by numbered loca-

## CONDITIONS CONDUCTIVE TO INFESTATION

LOCATION OF NESTS OUTSIDE STRUCTURE	NUMBER OF OCCURRENCES	FREQUENCY (%)
Structure built within 50 meters of forest	56	58.8
Direct wood-to-soil contact	34	35.4
Direct vegetation-to-structure contact	31	32.3
Leaking roofs or gutters	15	15.6
Colony nesting in a tree in the yard	12	12.5
Colony nesting in landscape timbers	9	9.4
Colony nesting in buried wood	8	8.3
Damp crawl space	8	8.3
Colony nesting in a tree stump	7	7.3
Plumbing leaks	5	5.2
Colony nesting in firewood or lumber	4	4.2
Damp attic	3	3.1
Building site had poor drainage	1	1.0
No obvious explanation	1	1.0

Table 2. Conditions conducive to infestations of *Camponotus modoc* in Washington State. Based on the analysis of numerous carpenter ant infestations in structures as reported by Drs. Laurel Hansen and Roger Akre of Washington State University ("Biology of Carpenter Ants in Washington State," *Melanderia* 43:1-61 [1985].)

tions; the corresponding key for this plan would be located on another page of the report.

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