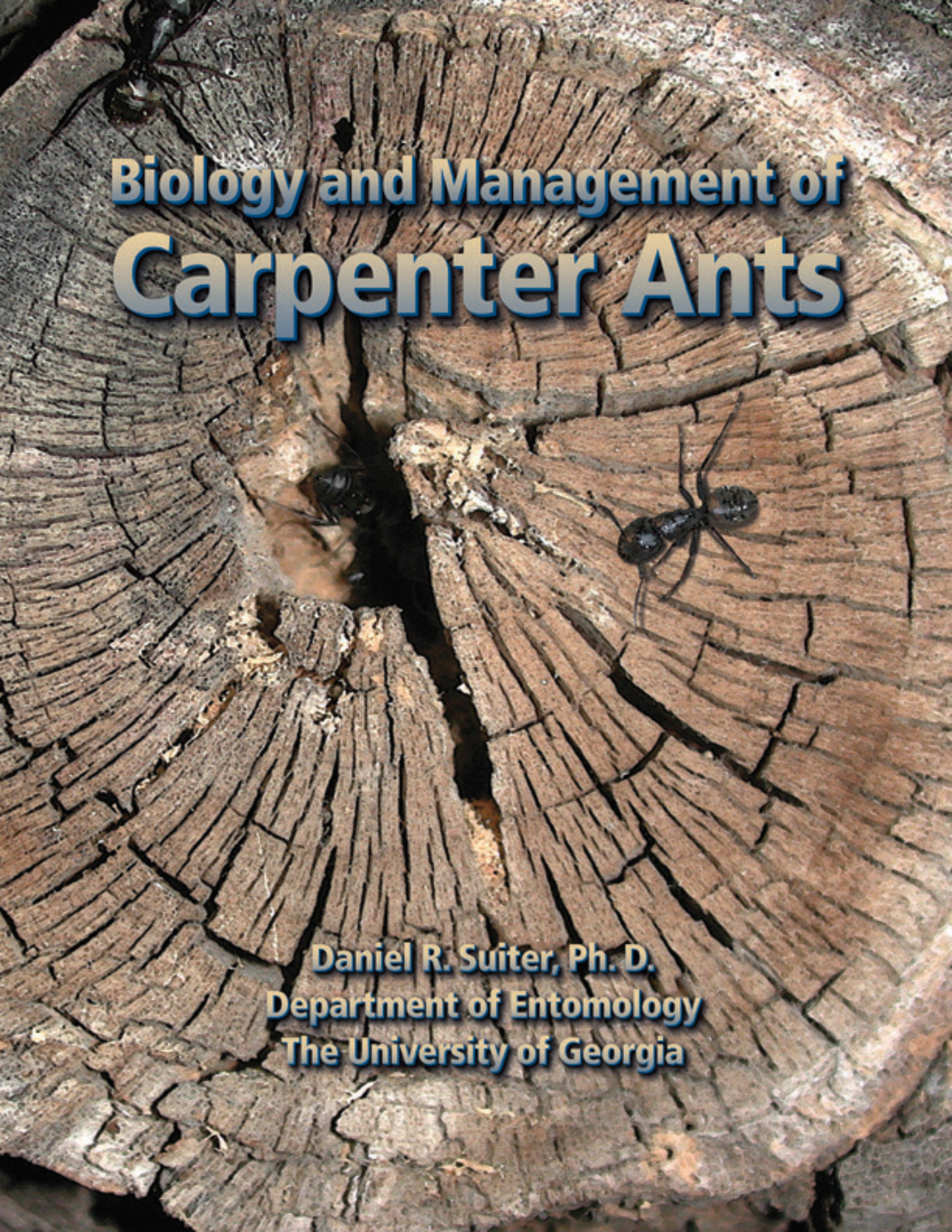

Biology and Management of Carpenter Ants

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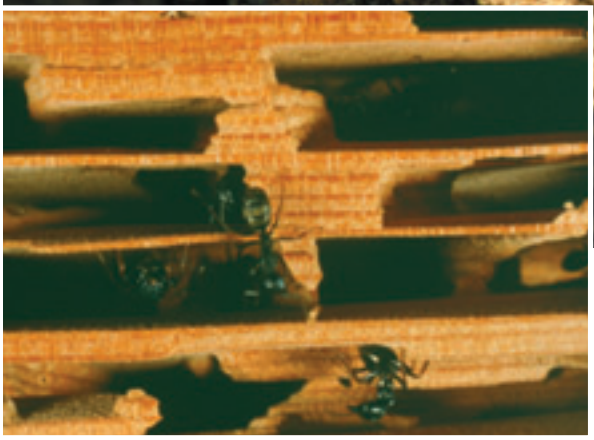

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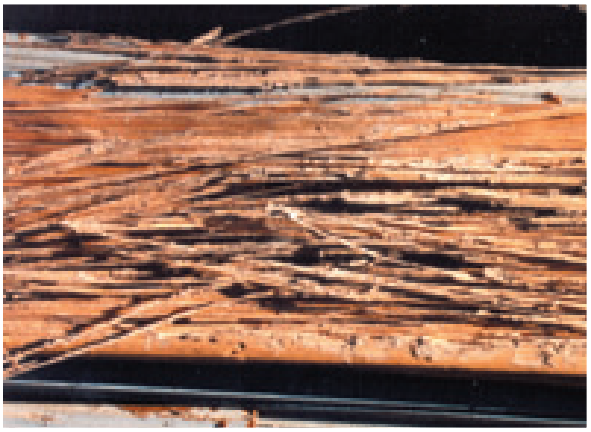

CARPENTER ANTS are so-called because of their habit of chewing wood to create nest sites. They do not eat wood, like termites, but excavate it with their strong, saw-like jaws to create random galleries where they nest (Figure 1). Carpenter ants are also a nuisance because of their abundance and large size.

Figure 1. Damage to wood caused by carpenter ants (above left) is different than the damage to wood caused by subterranean termites (bottom left). Carpenter ants chew wood with and across the grain, while termites only damage wood with the grain. Furthermore, termites often line thier galleries with mud, while carpenter ant galleries are smooth, clean, and devoid of mud and other debris.

Lloyd Davis

Figure 2. In Georgia, the black carpenter ant (top) is more common than the Florida carpenter ant (bottom).

Lloyd Davis

Figure 3. Ants from a single carpenter ant colony vary in size considerably. As such, ant size alone should not be used for identification.

IDENTIFICATION Carpenter ants are the largest of the pest ants found in Georgia. In Georgia, there are two pest species of primary importance, the black carpenter ant (*Camponotus pennsylvanicus*) and the Florida carpenter ant (*Camponotus floridanus*). Black carpenter ants are dull black and their abdomen is covered by yellowish hairs, while the Florida carpenter ant has a deep reddish-colored head and thorax and a shiny black abdomen (Figure 2). Since ants from a single carpenter ant nest vary greatly in size, ant size alone is usually not a good characteristic for identification. Carpenter ants vary in size from about 1/4 to 1/2 inch (Figure 3). To confirm their identity, a few ants should be collected in a small vial filled with a preservative, such as rubbing alcohol, and sent to a Cooperative Extension Service county agent. Look in the white pages under county name for the phone number of the nearest Cooperative Extension Service office.

BIOLOGY In Georgia, carpenter ants become active in the spring (March/April) and remain active through the early fall (September/October). During the winter, ants become inactive and hibernate in their nest to survive the cold. The habitat where carpenter ants are most common are those areas abundant in mature hardwood trees, typified by older, well-established suburban neighborhoods (Figure 4).

Figure 4. Carpenter ant habitat are those areas abundant in hardwood trees. These areas are typified by older, suburban neighborhoods where large trees are abundant and water rarely limits colony growth and survival.

Carpenter ants are most active at night, when it is not uncommon to see 10 to 20-fold or more ants than would be seen during daylight hours (Figure 5). Ants emerge about 15 minutes after sundown and leave the nest in large numbers in search of food, traveling up to hundreds of feet from the nest on semi-permanent trails (Figure 6). Unlike other pest ant species, carpenter ants create semi-permanent trails through the grass from their nest to areas where they collect food. Movement between nest sites and between nest sites and feeding sites is often facilitated by the use of these well-maintained, semi-permanent trails (Figure 7). In the evening, ants can be seen using these trails as they emerge from and return to their nest. Colonies may even use the same trail in different years. Carpenter ants also follow man-made guides, such as wall edges, when foraging (Figure 8).

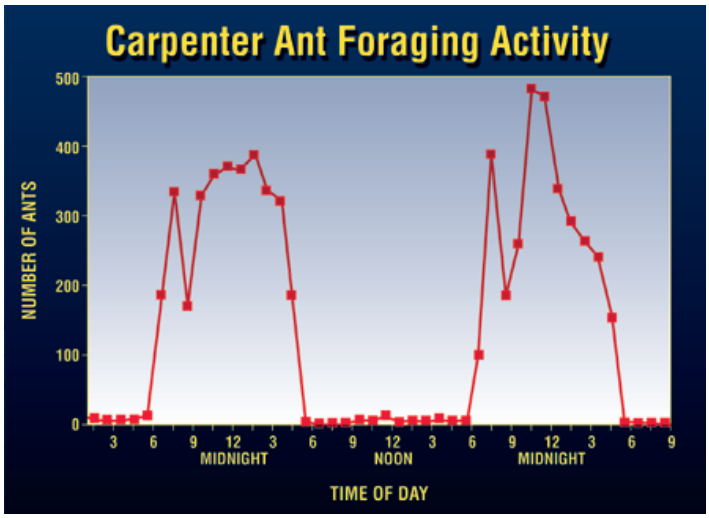

Figure 5. Carpenter ants are most active at night. This graph plots the number of ants counted per hour, for 44 consecutive hours, from a single black carpenter ant colony. Note the large number of ants counted during the night and the few (less than 10 per hour) counted during daylight hours.

Figure 6. Carpenter ants may travel well over 100 feet from nest sites to feeding sites. In this figure ants could be seen traveling 120 feet along a permanent trail from the tree on the left (yellow arrow) to the tree on the right (red arrow) where they were foraging for food.

Carpenter ants feed mainly in the tops of trees where they consume the sweet, sugar-rich honeydew directly from aphids and scale insects that are found feeding on the tree's sap. Honeydew is nearly pure sugar, and is excreted by aphids and scale insects in large quantities during the spring and summer months. Many ant species depend on honeydew as a stable, predictable source of food throughout the warm season.

Figure 7. Carpenter ants use well-established, semi-permanent trails (blue arrow) as they move between nest sites and feeding sites, and will even use the same path from one year to the next.

NEST HABITS Carpenter ants may establish nest sites inside and/or outside the home. Some examples of where carpenter ants have been found nesting inside are in moisture-damaged wood around chimneys and skylights, under bathtubs, inside dishwashers, in wall voids beneath window sills, inside hollow doors and door frames, under fiberglass insulation in crawlspaces and in wall voids, in wood porch supports and columns, under siding and wood shingles, and in moisture-damaged eaves. In general, wood suffering from moisture damage will attract and be used by carpenter ants as nest sites because damp wood is easier for the ants to chew than sound, dry wood. Damp wood, combined with warm temperatures, also promotes the survival, growth, and reproduction of carpenter ant colonies.

Outdoors, nests are most commonly found in hardwood trees containing treeholes (Figure 9). Most large hardwood trees contain a treehole or other imperfection where ants might nest. In treeholes, ants find an environment that is ecologically stable (consistent humidity and temperature) and protected from adverse environmental conditions and natural enemies. There they chew dead wood to create galleries for nest sites. Colonies are less commonly found in stumps, logs, railroad ties, or similar large pieces of wood.

Figure 8. Carpenter ants, like many other ant species, will use existing guidelines such as the edge of this concrete wall (blue line) to forage from nest sites (the tree in this figure) to foraging sites (a garbage can at the end of the blue line).

Outdoors, black carpenter ant nests are found almost exclusively in trees containing treeholes, while the Florida carpenter ant is more opportunistic. It is not only found nesting in trees but also under loose debris found lying on the ground (e.g., roof shingles, cardboard boxes, logs, etc.).

Figure 9. Outdoors, the most common nest site of black carpenter ants is in hardwood trees containing one or more treeholes.

FINDING NESTS IS THE KEY TO ELIMINATING CARPENTER ANTS The key to eliminating carpenter ant infestations is to find the nest and remove it, either physically (e.g., by vacuum) or by treating it with an insecticide. Inspect all locations listed as indoor and outdoor nest sites in the previous section. To find nest sites indoors, follow a few foraging ants to learn where they might be nesting. Tap the void suspected of harboring the nest. This excites the ants, allowing the inspector to detect their presence by hearing their raucous movements. Look for small piles of wood debris, resembling sawdust, that ants drop from the nest during excavation of the wood. Close examination of the debris may also reveal parts of dead carpenter ants and the uneaten, discarded pieces and parts of prey insects brought into the nest for food.

Carpenter ants found in the home often times can be found nesting outdoors in trees. To find outdoor nest sites inspect each large tree (greater than 6 inches in diameter), beginning 15 to 20 minutes after sundown, by walking around it while shining a flashlight up and down the trunk. If a nest is present, ants will be seen moving up and down the trunk as they leave from and return to the nest with food (Figure 10).

Since carpenter ants use permanent trails, use a flashlight to find ants on the trail and then follow them as they move to and from their nest. Finding just part of the trail can be a tremendous help in finding the nest. After locating several points along a trail a directional pattern will emerge, and often lead directly to the nest. Look for sawdust at the base of trees. Since carpenter ants must excavate wood to expand their galleries, it is common to find piles of sawdust on the ground at the base of a tree where carpenter ants nest (Figure 11). As mentioned previously, carpenter ants do not consume wood but must chew it to build and expand nest galleries. Galleries are created by biting off small pieces of wood and disposing of it to the outside. The small bits of wood often pile up at the base of a tree and take on the appearance of sawdust.

Figure 10. The presence of numerous carpenter ants moving up and down a tree trunk in more or less a single file line is a strong indication of colony presence.

Figure 11. Since carpenter ants do not eat the wood they chew, piles of sawdust-like wood shavings are commonly found at the base of trees where carpenter ants nest.

TREATING NEST SITES INDOORS Either physically remove indoor nests or treat them with an insecticide labeled for ant control indoors. Use insecticidal dusts and/or aerosols to eliminate carpenter ant infestations indoors. Apply small amounts of **dust** into voids where the ants are known to be nesting, are suspected of nesting, and/or in voids that they use when foraging. Dusts must be placed into voids so that they will not be contacted. Since dusts become airborne very easily, it is advisable to wear a protective mask when applying dusts.

Apply dusts so that a very thin film settles in treated areas. Place dusts behind electrical outlets and switch plates, and in the voids under window sills. Small holes (1/8 inch) may also be drilled into drywall in areas where ants are suspected of nesting, dust placed into the void and the hole patched with drywall cement.

Aerosol formulations may also be used when indoor ant nests are visible and accessible. For example, when nests are uncovered during inspection spray all ants with an aerosol before they can disperse.

Never use water-based or other wet formulations in voids. Wet formulations not only damage drywall, insulation, and wood molding but there is a danger of electrical shock and/or fire when using liquids around electricity.

TREATING NEST SITES OUTDOORS Outdoors, pour a water-based, **liquid insecticide** directly into carpenter ant nests located in treeholes. Use enough insecticide to thoroughly saturate the entire nest and all ants inside. This may require pouring one gallon or more of liquid insecticide into the nest. It is important to saturate all nest galleries with insecticide. If the nest is awkwardly positioned and difficult to reach with a liquid spray, it may be necessary to drill a small hole (one-quarter to one-half inch) into the top of the suspected nest location so that the liquid insecticide can be introduced and allowed it to flow downward through the nest.

When treating carpenter ant nest sites inside or outside, the choice of a particular product or brand name is not as important as the choice of formulation and the direct treatment of ants and/or nest sites. Carpenter ants are not resistant, or immune, to any insecticide.

CONTROL ATTEMPTS WHEN THE NEST CANNOT BE FOUND Often times the nest cannot be found or, if found, cannot be easily treated. Under these circumstances, use baits and/or treat outside with a liquid spray.

Baits are an effective means of controlling ants in some cases. Indoors use liquid baits and baits contained in childproof, plastic bait stations; outdoors use liquid and granular baits. For liquid baits, soak a small cotton ball and place it on a piece of aluminum foil in areas where ants have been seen. Granular baits should be delivered from two or three small piles (about the size of a quarter) placed in areas where ants have been seen (e.g., next to semi-permanent trails and trees containing nests) (Figure 12).

Perimeter treatments are used as a means of keeping ants from entering the structure. To conduct a perimeter treatment spray the outside walls with a water-based, liquid insecticide two to three feet up and spray the ground (including shrubbery, mulch, flower beds, etc.) five feet away from each wall. Spray as many areas traveled by carpenter ants as possible, and concentrate spray treatments to areas where ants might enter the structure (e.g., around doors and windows). As part of the perimeter spray program, apply a liquid insecticide to the trunk of each tree on which carpenter ants have been seen. This treatment strategy will kill ants moving up and down the tree trunk.

Perimeter treatments should be re-applied every 4 to 6 weeks during the summer and within a week following a heavy rain. Typical perimeter treatments often require 7 to 10 gallons of liquid spray.

Figure 12. Since carpenter ants rarely deviate from their foraging trail (see Figure 7), baits should be placed next to the trail and as close to the suspected colony location as possible. Baits should be delivered from several points sources and not scattered.

PREVENTION Homeowners can take several measures to help prevent future problems with carpenter ants. Eliminate sources of excess moisture to help make the home a less desirable nesting site to ants and other pests. Fix leaks around attic vents, pipes, sinks, and around chimneys and skylights. Replace water-damaged wood. Dry-out the crawlspace by installing a vapor barrier and foundation vents. Keep rain gutters clean and adjust drain spouts so water flows away from the building. Install rain gutters if they do not already exist.

Trim tree limbs away from the structure. Foraging carpenter ants often enter structures by bridging to roofs and siding from tree branches in contact with these surfaces.

SELECTING A PEST CONTROL PROFESSIONAL It is often best to employ a licensed pest control firm, especially when nests are difficult to find. The company chosen should conduct a thorough and complete inspection that results in location of the nest, or at least a probable nest site, before treatment. Although locating the nest is not always easy, it is the key to eliminating the carpenter ant infestation. Avoid having a pest management professional return to spray each month or whenever carpenter ants are seen. The infestation will continue unless nests are found and eliminated. If nests are found and treated it is unlikely that additional services for carpenter ant control will be needed since carpenter ant nests are fairly small and grow very slowly.

SUMMARY Because of their nesting habits carpenter ants can be persistent pests in and around homes. The key to eliminating a carpenter ant infestation is to find the nest and remove it. Look both indoors and outdoors for carpenter ant nests, and use the most appropriate control strategy to eliminate the infestation. If insecticides are used they must be used judiciously. Follow label guidelines strictly. If problems persist, seek the advice and services of a pest management professional and your County Extension Service agent.

THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

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