
SECTION 2
CHAPTER 7

ANTS

LEARNING OBJECTIVES

After completely studying this chapter, you should:

- Be able to identify key features in the life cycle, habitat, and appearance of the common species of ants.
- Be able to distinguish one ant species from another on the basis of their appearance, behavior, and habitat.
- Be able to explain the differences between ants and termites.
- Know the clues for determining whether ants are nesting inside or outside of a building.
- Know which areas to inspect inside and outside of a structure to identify problem ant colonies.
- Know what types of habitat alterations and pesticide applications are needed to control ants.
- Be able to select the appropriate control and management procedures, both chemical and non-chemical, for each species of ant.
- Know how to effectively use baits to control ants.

Ants are the dominant group of social insects related to bees and wasps. Except for the polar regions, they flourish on all land areas of the earth, from rain forests to deserts. All pest control technicians become involved with ant problems at some point in their career—most commonly because ants are found foraging or nesting inside structures, or because swarming ant reproductives are confused with swarming termites.

INTRODUCTION TO ANTS

The Ant Colony

The winged female reproductive mates with a male reproductive either during the swarming flight or on the ground. The male dies shortly afterwards. The female then digs or adapts a cavity, usually in the soil, and walls herself in. At this time, if her wings are not already broken off, she tears them off. She then produces eggs. When the tiny, white, legless grubs (larvae) hatch, they are fed with salivary secretions from the female's stored fat cells and the breakdown of her now useless wing muscles.

After several molts, the larvae change into soft, white pupae that look like motionless, white adults. Before they pupate, the larvae of some ants (carpenter ants and others) spin a silk cocoon—a white or tan papery capsule. When the pupae have made all the internal changes for adult functioning, they molt into the adult stage. Adults take on one of three roles or castes of the community: workers (all females), female reproductives (queens), or male reproductives.

- Males live short lives—they mate and die.
- Ant queens are females. They mate and raise the first brood by themselves. Afterwards, they produce eggs for the subsequent broods that go on to make the colony. They may live many years.
- Workers, also females, tend the eggs, larvae, and pupae. They forage outside for food and enlarge and defend the colony workings.
- Other specialized groups may arise from the worker caste in certain species, for example, soldiers (ants that defend the colony).

Foraging

Ants eat a wide variety of foods, including other insects, seeds, nectar, meats, greases, sugars, and honeydew. Honeydew is a liquid produced by plant-sucking insects such as aphids, mealybugs (groups of small insects with a white powder clinging to them), scale insects, and planthoppers. These insects feed in groups on plant stems and leaves. Many species of ants protect these aggregations from other insects and take drops of the honeydew these small, sap-sucking individuals produce.

Some ant species appear to just wander randomly; others trail one another precisely from colony to food source and back. Ants communicate with one another using various methods for transmitting messages. Workers foraging for food attract attention and communicate their messages when they return to the colony.

ANT AND TERMITE SWARMERS

The swarming of small, dark insects near or inside a structure panics people who fear their homes are infested by termites. Pest control technicians must be able to distinguish between ant and termite reproductives and communicate the differences clearly and confidently to their clients.

Principal differences are:

- **Ants** have a complete metamorphosis that is, they go through the egg, larva, pupa, and adult stages all of which look different from the others. Ant workers are adults.

Termites have a gradual metamorphosis. They go through the egg, nymph and adult stages. Nymphs look like adult workers. Reproductives are dark-bodied.

- **Ants** have a thin or “wasp” waist (called the **petiole**) between their thorax and abdomen.

Termite waists are NOT narrow. Termite bodies are straight-sided with no constriction. Thorax and abdomen blend together.

- **Ants** have elbowed antennae. A long, straight segment connects to the head. Remaining segments flex and bend.



Figure 7.1. Ant vs. termite reproductives.

Termite antennae are entirely flexible. They are made of many small segments strung out like beads. Termites wave them in front, using them to touch and feel.

- **Ant** reproductives have two pairs of wings. The front pair is wider and markedly longer than the back pair. Often ants have a black dot near the tip of the front wings, and dark wing veins can be seen. Ant wings do not break off easily.

Termite wings are long and narrow; both pairs are the same shape and almost the same length. Termite wings break off with a touch. If termite swarmers have been crawling, their broken wings litter the swarm area. Termite wing veins cannot be seen with the naked eye.

ANT CONTROL AND MANAGEMENT

It is important to note that, of the ants found indoors, only a few species are responsible for the majority of infestations. Some species are not common but appear sporadically; and other types of ants are found inside only under rare or accidental conditions. The later group is difficult to prepare for, but the major species should be studied and discussed, and control experiences analyzed. Species that appear sporadically may take an inordinate amount of the pest controller’s time, with inconclusive results. These elusive ants may appear several times in one year, then not be encountered for several years. Some are common in some regions and uncommon in others.

The best way to learn about ants is to build a collection and keep it for comparison. Elements important to consider when identifying and controlling an ant species are:

Size. Ant species have fairly consistent size.

Nodes. Nodes are swollen segments of the petiole (the narrow connection between the thorax and abdomen). Most species have one; others have two.

Color. Color may vary within the same species of ant, but it also can be a useful eliminating factor. Be sure to note the surface appearance of the exoskeleton.

Range. Most ant species are known to occur in a specific region.

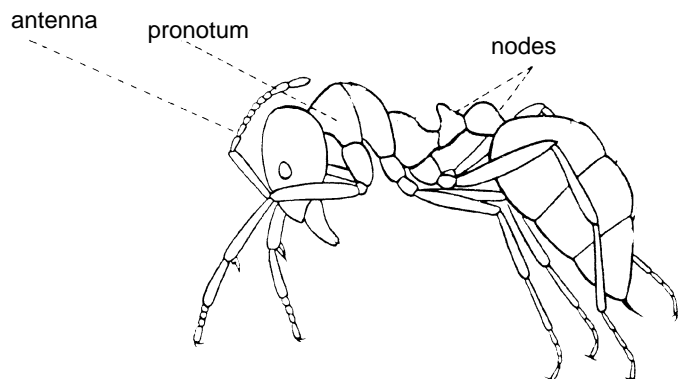


Figure 7.2. Identifying features of ants.

An important first consideration in the control of ants is to determine whether the ant colony is located **inside** or **outside** the structure.

Indications that a colony is inside are:

- Ant workers are consistently found inside over a long uninterrupted period.
- Nest building is observed inside (look for wood shavings of carpenter ants, “dumping” materials of pavement ants, etc.).
- The infestation is located in a high-rise building.
- Inside swarming is observed.

Indications that a colony is outside are:

- Ants inside can be “trailed” outside.
- Ants outside can be seen coming inside.
- Nesting sites outside are near the infested structure (look for mounds next to the foundation, or trees with large carpenter ant colonies touching an infested portion of the house).
- Ants nest under slabs or swarm inside, but workers do not forage inside.

Whether the colony is indoors or outdoors, ants that are known to tend honeydew-producing insects often forage inside before plant insect populations can build up outside. After populations of aphids, mealybugs, scale insects, whiteflies, and planthoppers become numerous (in late spring), ant colonies nearby put a great deal of energy into tending and protecting these plant-sucking insects. Worker ants foraging inside kitchens and basements often leave houses at this time. They may return in dry weather seeking moisture but often will not be seen until the next spring. When pest control efforts coincide with this period, it is often difficult to tell whether the pest management procedures are effective or whether the ants abandoned the structure because of natural habit.

The following general considerations are important in developing an ant control plan:

Inspection

- Talk to the client. Get all information possible from the resident.
- Observe ant worker movement and plot on a diagram, if need be. Look for the focus of the infestation.
- To confirm observations, use traps baited with a grease and a sugar or syrup or other ingredients suggested in pest control references (e.g., peanut butter and cookies).

Inside: Inspect holes and cracks where workers enter, old or new moisture stains, food accumulations (e.g., dry pet food), activity near appliances (e.g., dishwasher and washing machines), under bathtubs and showers, in drawers, and in corresponding areas in adjoining room or rooms above and below.

Outside: Inspect for workers behind vines, shrubs, and other plants near the house; near expansion joints, slabs, patio blocks, bricks, boards, and plant pots; under and inside wooden columns and pillars; outside door and window frames, in window wells; at places where elec-

tric and telephone wires, and air-conditioning refrigerant pipes penetrate house walls, in trees that harbor colonies and provide access to houses by overhanging limbs that touch or even scratch shingles; and among water meters and storm drain inspection manholes. Inspect plants for ants tending aphids, mealybugs, etc.

Habitat Alteration

Once you have determined where the infestation is coming from, use habitat alteration to block ant entry points or to make the environment unfavorable.

- Caulk wall penetrations and mortar masonry cracks. Wall penetrations include utility lines, air-conditioning refrigerant pipes, phone lines, etc.
- Tighten door and window frames.
- Repair water leaks.
- Remove food sources by regular cleaning (counters, floors, kitchen appliances, removing pet food, etc.) and keeping food in tightly sealed containers.
- Trim shrubbery away from house.
- Remove firewood that is stacked close to the house, and boards, stones, etc., that encourage nesting. Screen openings in hollow pillars, columns, and ventilators.

Pesticide Application

- Consider the species when choosing bait. Use baits with stomach poisons or with insect growth regulators. Baits are excellent in sensitive areas (e.g., computer or hospital rooms) where pesticide sprays are not appropriate. Do not spray or dust around baits. Never store baits or bait materials where they can be contaminated with any other odors, especially fumes of pesticides. *Ants and other insects can detect minute amounts of foreign or repellent chemicals.*
- Use crack and crevice treatments in areas where nests are suspected. Use dusts in wall voids and use canned-pressurized liquid pesticides with small-diameter crack and crevice device. Tubing can be obtained in long lengths and can be threaded through construction elements to treat areas distant from the pressurized can.
- Control ant-tended aphids and mealybugs with horticultural pesticides, such as oils or soaps.
- Apply wettable powder or microencapsulated spray formulations where pesticides may be absorbed into surfaces.
- Drill holes where practicable (e.g., false floors in sink cabinets, window frames, wall panel grooves, and other voids).
- Use spot treatments when necessary, but be wary of repellent activity.
- Use granules and drenches with registered formulations outside.

Develop a specific pest management plan. Where large outside areas need treatment, do not treat as an extension

of a yard problem. Consider spot treatments and perimeter spraying carefully. Drawbacks to these reactive treatments include:

- Nest areas can be completely missed.
- Ants may move to other areas of activity.

Follow-up

Reinspect or contact clients with troublesome ant control problems within one week to ten days depending on the control strategies (baits and insect growth regulators [IGRs] take longer than dusts to show results). Remember, pesticide treatments can repel ants and make them active in other areas. Colonies with multiple queens may break up into several colonies.

LARGE ANTS (1/2 inch or larger)

CARPENTER ANT (*Camponotus* spp.)

There are many species of carpenter ants in North America; few enter structures to forage and fewer nest in structures. But these two habits (foraging and nesting inside), coupled with their large size and vigorous activity, make these invaders impossible to ignore. In Michigan, the black carpenter ant is the primary pest species. As their name implies, carpenter ants work in wood but do not digest it.



Figure 7.3. Carpenter ant, *Camponotus pennsylvanicus*.

BLACK CARPENTER ANT (*Camponotus pennsylvanicus*)

The workers range in size from 1/4 inch to almost 1/2 inch; the queen is 3/4 inch. Outside workers can be confused with field ants (*Formica*) which do not enter structures. Carpenter ants have an even, smooth, arching profile beginning just behind the head and descending to the waist, or petiole, which has one node. Field ants and most other ants have bumps or spines along the profile of the thorax, particularly near the petiole. The black carpenter ant's abdomen is covered with gray or yellowish hairs,

but the basic black color is still obvious. The head and thorax is also black in the majority of individuals, but the sides of the thorax and part of the legs of a few may be dull red.

A carpenter ant colony begins in isolation but not necessarily in wood. This first brood may be under a stone, in a roll of tarpaper, or in innumerable other secretive spots, but the colony soon moves into wood (such as a fallen log, tree hole, stump, or structure wall). When carpenter ant workers excavate nest galleries, they use their jaws as gouges and make tunnels by shaving out small pieces. Unlike termites, they do not eat the wood. It has no nutritional value to them, and they discard it by dropping it out of the nest area or by piling in one place and discarding the whole pile later (similar to the pavement ant's dumping habit). This pile of carpenter ant shavings, called sawdust, is very soft and is made up of pieces like those a fine chisel would make. Gritty construction sawdust in attics or on sills can be left over from construction or repairs and might suggest carpenter ant shavings to those who do not know the difference. The process of ant gallery excavation results in galleries with very smooth sides. No mud is involved (like in the tunnels of subterranean termites), and there is no dust or pellets (like those produced by wood borers or dry wood termites) only numerous large, smooth, brown-stained tunnels that provide harborage for the carpenter ant colony. A nest or colony might harbor several thousand inhabitants. Large colonies of carpenter ants in critical areas of structures can cause structural damage, but the colony more likely resides partially in structural wood and partially in void spaces (e.g., between roof boards, between studs under windows, or between subflooring and shower bases).

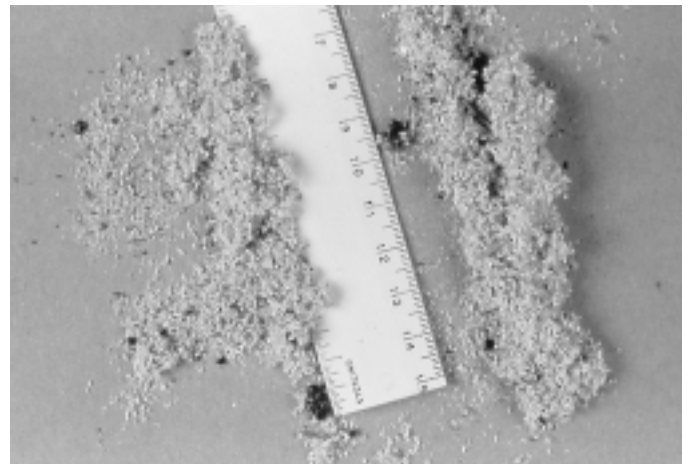


Figure 7.4. Carpenter ant shavings.

The most common outdoor harborage is a living tree with a rotted spot inside. Other common sites are stumps or firewood. The carpenter ant is a valuable link in the reduction of plant cellulose. It is not surprising that mature wooded neighborhoods often have structural carpenter ant problems. New neighborhoods or developments built on cleared woodlots can inherit ant colonies from trees. Some colonies are brought in with building

materials. Rustic cabins, summer homes, and park structures will likely become infested sooner or later.

Black carpenter ant workers forage for food such as honeydew, insects, and juices from ripe fruit. Indoors, they like sweets, meats, fruit juices, and moist kitchen refuse. Carpenter ants always prefer a humid atmosphere. Vines on building walls, branches, and telephone wires provide a bridge-like access into structures.

Control and Management of Carpenter Ants

Inspection

It is important to discover whether carpenter ants are nesting inside or outside. If nesting inside:

- Their presence usually indicates a moisture problem in the building.
- They have excavated galleries for harborage in structural wood.

Moisture problems and black carpenter ants are nearly inseparable. In the majority of cases carpenter ants make their nests in wood that has been wet and infested by a brown rot fungus. Dark fungus stains on the wood indicate the presence of such moisture. Moisture in wood can be caused by:

- Improper attachment of wooden additions, dormers, and hollow wooden columns that absorb moisture.
- Patios or porch floors, door sills, downspouts, or grading where water collects or drains toward the structure.
- Regular gutter overflow pouring rainwater down the side of the building as well as back onto roof boards, fascia, soffits, etc.
- Leaking roof valleys.
- Improper *flashing* around chimneys, vents, and skylights.
- Improper roofing or holes in the roof.
- Window sills directly exposed to rain.
- Lack of ventilation in any area where moisture accumulates.

Inside moisture accumulates:

- Around any leaking plumbing or drains (especially shower drains).
- Unvented attics and crawl spaces.
- Unvented dishwashers, washing machines, icemakers, etc.

The many nesting sites, foraging entrances, and food and moisture sources offer clues for inspection and location of the nest. The area where the majority of ant activity is seen may identify a nest site if entry from the outside can be ruled out. Carpenter ants are more active at night and inspection at that time may be helpful.

Habitat Alteration

- Where nests are located inside, remove and replace infested structural wood.
- Stop the intrusion of moisture.

- Caulk and screen actual and potential ant entryways.
- Ventilate areas where moisture accumulates, regrade where necessary, and repair roofing, guttering, etc.
- Recommend trimming trees where branches touch a structure or overhang roofs. Tree removal may be necessary.

Pesticide Application

Eliminating colonies and nesting sites is a primary way to eliminate carpenter ant infestation.

- Use pesticidal dust or pressurized canned aerosols when nests are in wall voids. Sprays are less effective.
- With the use of *flushing agents*, hundreds of ants may remain unaffected and can relocate the colony in a matter of hours or less to trunks, storage boxes, furniture drawers, and other voids.
- When indirect treatment is required, liberal placement of acceptable bait stations can be used.
- Dust, spray, or bait can be used on outside colonies (e.g., in tree rot).
- Professionals should evaluate trees with rotted places.
- Honeydew-producing insects involved in feeding carpenter ants should be treated with pesticides that will not eliminate parasites and predators (e.g., oils and pesticidal soaps).

Follow-up

Carpenter ant infestations often cannot be controlled in one visit. Painstaking inspection is needed to make management effective. Annual follow-up also assures that necessary habitat alterations have been made by clients.

Maintain records of all inspection discoveries and subsequent recommendations as well as records mandated by law.

SMALL- TO MEDIUM-SIZED ANTS (1/8 to 1/2 inch long)

ACROBAT ANTS (*Crematogaster* spp.)

Worker ants measure around $\frac{1}{8}$ inch long. The ant has two nodes; it is shiny brown to nearly black. The workers appear to have their abdomens attached upside down: flat on top, "bellied" below, and pointed at the tip. When they are excited, they point their abdomens up or even over their heads—hence their name. Acrobat ants are common over most of the United States. There are many species.

Acrobat ants tend aphids and mealybugs for honeydew and also feed on other insects. They usually establish their colonies in or under rotting logs and stumps in nature and sometimes live in abandoned carpenter ant galleries if the wood is damp enough. They can also

engrave their own small galleries in wet roof boards, house siding, porch rafters, pillars, sill plates—any part of a structure where the wood does not completely dry out. Like pavement ants, acrobat ant colonies occasionally dump their refuse. It consists of tiny wood shavings like those of the carpenter ant. The difference between acrobat ant and carpenter ant shavings is that those of the acrobat ant are smaller and always dark-stained from fungus. Acrobat ants may feed inside in kitchens.

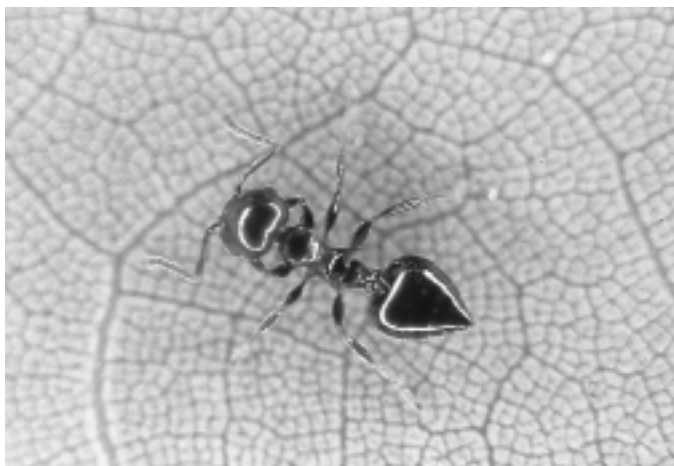


Figure 7.5. Acrobat ant, *Crematogaster* spp.

Control and Management of Acrobat Ants

Inspection

Look where structural wood has been subjected to water leaks:

- The porch roof near the house, porch floors, siding where gutters overflow, ends of rafters in the shade, sills, and window and door casings where rain water hits.
- In older buildings and historical buildings that haven't been kept up. (Fungus or rot problems are very likely more important here than ant damage.)

Habitat Alteration

- Remove and replace damaged wood.
- Change grade and redirect downspouts that pitch water toward structural wood.
- Clean or replace gutters.
- Trim overhanging tree limbs that keep wood from drying.
- Move logs, stumps, leaves, and grass clippings away from structures.

Pesticide Application

Habitat alterations will usually stop the problem. Use contact sprays if needed.

Follow-up

Susceptible structures, especially buildings with historical significance, should always be periodically monitored. Detailed records on pest infestations, treatments, and repairs should be kept on file.

SMALL ANTS (1/8 to 1/4 inch long)

In this group of ants, the workers are larger than the tiny ants but under 1/4 inch in length. Several interesting structure-infesting ants are in this group.

PAVEMENT ANTS (*Tetramorium caespitum*)

This ant is found in cities in the Midwest. Around 1/8 inch long, the pavement ant has two nodes. It has a shiny abdomen but a dull red-brown head and thorax; the abdomen is darker; legs are lighter. The red-brown head and thorax are dull because of minute, parallel furrows found on the front and sides.

Pavement ants nest outside under rocks, at the edge of pavement, door stoops and patios. They commonly move their colonies inside between the foundation and the sill plate. Outside, pavement ants tend honeydew-producing insects and feed on other insects and seeds.

Pavement ants store debris in certain areas of the colony or nest. When this area is needed for nest expansion, workers clean out the junk accumulation and dump it. Colonies located on foundation walls drop debris over the side in a pile on the basement floor. The ant dump consists of sand, seed coats, dead insect parts, and sawdust from the house construction. Not knowing the source, householders often view these dumps with alarm.

A closely related species with good trailing habits and rapid movement is commonly introduced with tropical plants and flourishes in warm moist environments.



Figure 7.6. Pavement ant mounds.

Control and Management of Pavement Ants

Inspection

- Inspect along sill plates in basements, and around heat ducts and baseboards in areas where ant workers are active.
- Look for foraging in the kitchen; such activity may indicate a nest in the basement below or just outside.

- Outside, look for tiny mounds next to the house near windows and doors or nest openings under stones.

Habitat alteration

- Remove stones that are sheltering ants.
- Recommend indoor sanitation, including the elimination of moist garbage in dry weather.
- Caulk observed ant entrance points.

Pesticide Application

Inside:

- Apply dusts or sprays in cracks and crevices of baseboard molding where activity is noticed.
- Treat cabinet cracks around kitchen sinks.

Basement:

- Treat cracks along foundation walls, under sill plates, and near heat ducts.
- Be careful not to contaminate heat or air-conditioning ducts.
- Treat cracks in slabs on grade foundations as well as the bases of outside door jambs.

Outside:

- Treat nests. Use pressurized gas aerosols to penetrate nest galleries.
- Treat cracks and entry points.

Follow-up

Follow-up is usually not needed, but where control is not achieved, an intense inspection is indicated.

TINY ANTS (1/8 inch or less)

ODOROUS HOUSE ANTS (*Tapinoma sessile*)

This ant, slightly broad, measures around 1/8 inch long. It has one node, is dark brownish gray and covered with a velvety sheen. It can be found from Canada to Mexico including all of the lower 48 states. It is one of the more difficult ants to control.

The body of the odorous house ant is relatively soft and can be easily crushed. When this occurs, a foul odor is released. The single node of the petiole is very small and hidden by the overlapping abdomen. This identifying characteristic is best seen by crushing the soft ant and with a good hand lens noticing the absence of a distinctive node. From above, the abdomen is broad compared with the width of the thorax.

An average colony will have 3,000-4,000 members and several queens. Outdoor nests are shallow and are located under stones and boards. Inside, a colony can nest in many types of cavities.

The workers trail one another. Outside, they actively tend honeydew-producing insects and take flower nectar. Inside, workers seem to prefer sweets.

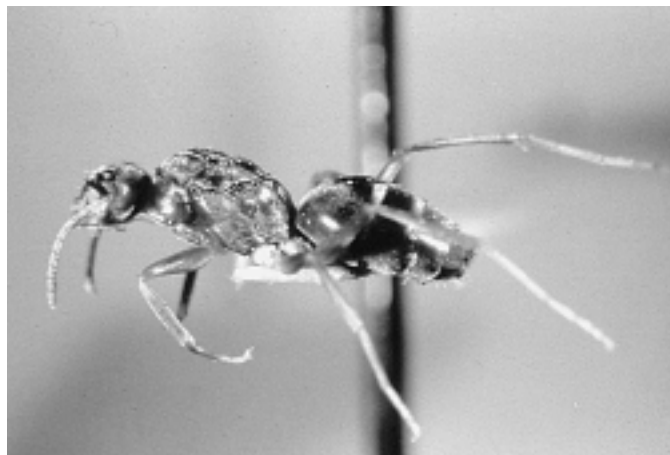


Figure 7.7. Odorous house ant, *Tapinoma sessile*.

Control and Management of Odorous House Ants

Inspection

- Begin by investigating locations where ant activity is observed.
- Pyrethrins can flush ants, causing them to rush around erratically, excitedly elevating their abdomens. This could cause the colony to split itself and relocate.
- Always inspect outside close to the location of inside activity. Look under stones and boards for colony openings and activity.

Habitat Alteration

- Remove stones and boards harboring odorous house ant colonies.

Pesticide Application

- Use dusts or residual sprays applied in cracks and crevices in the area of entering worker trails. Any ant exhibiting strong affinities to the outside environment (honeydew insects, flower nectar) and with nesting mobility (shallow nests, cavity nests, utilization of protective objects) should be sought outside as well as inside, unless its locality inside precludes its reaching the outside.
- Control populations of honeydew-producing insects on plants near the structure.
- Use pesticides registered for the insects on plants. To maintain parasites and predators of these plant insects, use low-toxicity pesticides such as insecticidal soaps and oils.

Follow-up

Emphasize to the client the need to control honeydew insects on plants and to eliminate nest harborage near structures. Keep in mind that it is a very difficult ant to control.

PHARAOH ANTS (*Monomorium pharaonis*)

A tiny ant, not much more than $\frac{1}{16}$ inch long, the pharaoh ant has two nodes. Its head and thorax are dull yellowish to light orange or a little darker. It has a shiny dark abdomen, especially at the end.

It is found in most urban centers in the United States. Pharaoh ants prefer warmer buildings and warm areas (80 to 85 degrees F) in buildings for nesting. These ants are active year round in houses and portions of large buildings such as hospitals, office buildings, laboratory buildings, etc. Nesting sites include wall voids, cracks in woodwork, stacks of paper, envelopes, bed linens, bandage packs, desk drawers, etc. It is common to find many colonies in one building and, perhaps, several in one room. Colonies have multiple queens and increase by dividing—one portion of the colony goes with each queen. No swarms have been recorded, so new infestations are apparently transferred by moving infested objects.



Figure 7.8. Pharaoh ant, *Monomorium pharaonis*.

Pharaoh ants trail one another and are attracted to grease, meats, insects, and sweets. These harborage and food preferences bring it to coffee areas, kitchens, paper and other supply storage, office equipment, medical storage, laboratory benches, many kinds of biological cultures including insect-rearing chambers, and hospital rooms with wound or burn patients—these ants have turned up in IV tubes, medicine droppers, and bandage stacks.



Figure 7.9. Pharaoh ants—male, queen, and worker.

Control and Management of Pharaoh Ants

Inspection

- Inspect where sanitation is slipping or where food is available, particularly sugars—where coffee is made, where lunches are eaten, in desks where snacks are stored.
- Inspect storage room spills, laboratory media, culture and formula preparation rooms, nurses' stations, unwashed cups, coin machine canteens, and kitchens frequented by children.
- Use small disposable peanut butter-baited cups to demonstrate where ants are most prevalent (e.g., desk drawers, opened food boxes). Pharaoh ants are easily baited.
- Look at water sites. These ants are attracted to dripping faucets. They drown in plant water bottles and coffee water held overnight. Floating ants are frequently the first sign that these ants are present.

Habitat Alteration

- Reduce stored supplies.
- Clean, rearrange, and rotate supplies to expose nests.
- Clean food areas before the end of the workday or bedtime and empty water containers that stand overnight.

Pesticide Application

Several baits are available for pharaoh ant control. Place a bait station wherever a positive monitoring trap was located.

- Set commercial bait stations. One type uses a stomach poison that is well accepted by ants and a grain-based bait that includes ground insect exoskeletons. This bait is specifically manufactured for pharaoh ant control. These bait stations can be placed in desks and used in hospital rooms and laboratories.
- Use a mixture of liver extract (or strained-liver baby food), angel food cake, and honey or syrup with a registered growth regulator or boric acid powder. This bait can be placed in small cups or screened vials or injected into cut drinking straws using a food baster. Mix to a usable consistency.
- Use a commercial preparation of mint apple jelly and boric acid; ingredients can also be purchased separately and mixed. Place the preparation on pieces of masking tape for easy retrieval.
- Apply sprays or dusts in cracks and crevices when preferred. All potential harborage near positive monitoring locations should be treated thoroughly.

Follow-up

Reinspect by monitoring bait cups. When sprays or dusts are used, or when colonies are disturbed by inspection or habitat alteration, colonies may move or split.

LITTLE BLACK ANTS (*Monomorium minimum*)

This little ant is no more than $\frac{1}{16}$ inch long. It has two nodes and is shiny black. The ant is widely distributed in the United States especially in the northern and eastern states, and in southern Canada. It normally nests outdoors and tends honeydew-producing insects.

THIEF ANTS (*Solenopsis molesta*)

Less than $\frac{1}{16}$ inch long, the thief ant has two nodes and is shiny with a yellowish or slightly darker color. It is widely distributed throughout the United States, especially in the eastern and southern states. The thief ant nests both inside and outside and tends honeydew-producing insects.

USING BAITS TO CONTROL ANTS

Baits are a very effective tool for managing ant problems, especially for pharaoh ants or when a nest may be hard to find (as is often the case with thief ants). The food source will contain a sweet or protein/fat base, or a combination of both, mixed with a slow-acting poison. Workers will carry the materials back to the nest and feed the larvae, other workers, and the queen. Some tips on using ant baits successfully are:

- Correctly identify the ant species. Some ant species are less inclined to enter bait stations than others. Some ants prefer baits that contain sweets or dead insects (e.g., field ants), while others prefer a protein base (e.g., pavement ants).
- Clean up any spilled food and place any accessible food in airtight containers (other food sources compete with bait material).
- Keep baits in protective overwrap until ready to use. Baits should be stored separately, away from other chemicals, to avoid contamination.
- Wash hands thoroughly and wear clean gloves when handling baits.
- Allow time for baits to work (7 to 14 days for normal colony elimination). There may be a surge in ants after 2 to 3 weeks because of new emergence from pupae. Rebait as required.

- Replace baits every 3 months or less. Ants won't be attracted to stale baits.
- Place additional baits to ensure adequate coverage. Emptied bait stations are a sign that not enough baits have been placed.
- Place bait stations where activity is greatest.
- Consider using alternate baits (ants sometimes change their feeding preferences).
- Check into the history of pesticide use. If residuals have been used, clean up residues with dish detergent and water prior to bait placement. Instruct the client not to spray or fog once baits are placed. Ants are extremely sensitive to chemical residues and will avoid bait stations if they detect any.

SUMMARY

Ants are the dominant group of social insects. Their relatives are bees and wasps, some of which also have social habits. All of these insects undergo complete metamorphosis. Ants have three principal castes: the female reproductives, the male reproductives, and female workers. Each caste has different tasks and behavior. Ants, being social, live in colonies. A single female starts the colony after being fertilized by males. Most of the offspring of this female (often called the queen) are also female and they do the work of the colony, such as food gathering and rearing the young (larvae and pupae). Many ants tend insects that suck plant sap and produce a liquid (honeydew) that ants eat. Many species also have a broad diet, feeding on other insects, sugars, and greases; their habits may change seasonally. Most ants have subterranean colonies and do not enter buildings, but some can live outside or set up their colonies inside. One species, the pharaoh ant, lives inside almost exclusively. Knowing the behavior of the common ant species will help to decide the control measures needed to suppress pest ants.

SECTION 2
CHAPTER 7

Review Questions

Chapter 7: Ants

Write the answers to the following questions and then check your answers with those in Appendix A in the back of this manual.

- Ants and termites are both closely related social insects.
 - True
 - False
- Ants found inside a structure always come from a colony that is located inside.
 - True
 - False
- Carpenter ants make galleries in wood, which is also one of their principal foods.
 - True
 - False
- The ant caste system consists of :
 - Workers, drones, soldiers
 - Soldiers, workers, reproductives
 - Male and female reproductives and workers
 - Larvae, pupae, adults
- Indicate whether the following statements are characteristic of ants or termites.
 - Ant Front pair of wings is wider and longer than the back pair
 - Termite Have "petiole" between thorax and abdomen
 Young are nymphs
 Undergo complete metamorphosis
 Thorax and abdomen blend together; not narrow
 Wing veins not visible with the naked eye
 Leave many broken wings in swarm area
 Have elbowed antennae
- Ants forage for _____ to sustain themselves and the colony.
 - Honeydew, greases, sugars, and insects
 - Wood
 - Honeydew alone
 - Pheromones
- Which ant species almost always has its colony inside?
 - Carpenter ant
 - Pharaoh ant
 - Pavement ant
 - Odorous house ant
- List at least four means of altering ant habitat to discourage ants from invading a building.
 - Place baits, then spray around them.
 - Crack and crevice can be used to treat areas where nests are suspected.
 - Store baits safely with other pesticides.
 - A & C
 - B & C

- 10-18. Match the following to the appropriate description.
- A. Carpenter ant
 - B. Acrobat ant
 - C. Pavement ant
 - D. Odorous house ant
 - E. Pharaoh ant
- _____ 10. Common problem in hospitals.
- _____ 11. Point abdomens up or over their heads when excited.
- _____ 12. Soft bodies, easily crushed.
- _____ 13. Average colony numbers 3,000 to 4,000 members.
- _____ 14. Live in trees with rotted areas inside.
- _____ 15. Sometimes live in abandoned carpenter ant galleries.
- _____ 16. Debris is found dumped from foundation walls to the basement floor.
- _____ 17. Often considered a problem in historical buildings.
- _____ 18. Produce wood shavings that are smaller than those made by carpenter ants and always dark-stained from fungus.
19. If the carpenter ant colony is found outside but the ants are a problem inside the building, advise the client to:
- A. Use pressurized canned aerosols in wall voids.
 - B. Trim trees where branches overhang or touch roofs.
 - C. Use a flushing agent to determine extent of infestation.
 - D. Caulk and/or screen to prevent ant entryways.
 - E. B & D
20. Which would be the "best" method for controlling the odorous house ant?
- A. Stop the intrusion of moisture into wood.
 - B. Treat cracks along foundation walls.
 - C. Control populations of honeydew-producing insects on plants.
 - D. Clean gutters.
 - E. A & D
21. Which would be the "best" method for controlling pharaoh ants?
- A. Set several bait stations.
 - B. Treat cracks along foundation walls.
 - C. Control populations of honeydew-producing insects on plants.
 - D. Clean gutters.
 - E. A & D
22. Which would be the "best" method for controlling acrobat ants?
- A. Set several bait stations.
 - B. Treat cracks along foundation walls.
 - C. Control populations of honeydew-producing insects on plants.
 - D. Clean gutters.
 - E. A & D
23. Which would be the "best" method for controlling pavement ants?
- A. Set several bait stations.
 - B. Treat cracks along foundation walls.
 - C. Control populations of honeydew-producing insects on plants.
 - D. Clean gutters.
 - E. A & D
24. For which ant species would altering the habitat by removing or replacing damaged wood be an effective control?
- A. Carpenter
 - B. Acrobat
 - C. Odorous
 - D. Pharaoh
 - E. A & B
25. Baits are effective at controlling ants within 3 to 4 days.
- A. True
 - B. False
26. Use different baits for different ant species.
- A. True
 - B. False

