

MAINTENANCE GUIDEBOOK VII TERMITE, INSECT AND RODENT CONTROL

CHAPTER FOUR - ANTS

SECTION A CHARACTERISTICS AND RECOGNITION

1. GENERAL

Of the 750 different kinds of ants found in almost every North American habitat, only about 30 species cause problems in dwellings. Because their small size permits ants to enter tiny holes, ant problems may be a common resident's complaint. Since ant-control methods are rather similar for various kinds of ants, this chapter will describe methods for controlling ants frequently found in kitchens, pantries, and food storage areas. Structure-damaging carpenter ants are covered in Chapter Three—Management of other Wood-Destroying Insects.

Most ants swarm once a year, when winged queens and drones leave the nest to initiate new colonies. Winged ants are easily mistaken for termites, especially when they appear in large numbers in a basement or next to the dwelling. The easiest ways to distinguish ants from termites are:

- Ants have a thin or "wasp-like" waist, while termites have straight-sided waists without constriction;
- Ants have elbowed antennae while the antennae of termites are entirely flexible;
- Both winged ants and termites have two pair of wings, but an ant's front pair is wider and longer than the rear pair, while a termite's are long, narrow, and both are the same shape and length.

Ants are attracted to a wide variety of foods, including other insects, seeds, nectar, meat, grease, sugar, and honeydew (a liquid produced by plant-sucking insects). Some ant species seem to wander randomly while others form trails from the colony to a food source. Most ants bite when disturbed and many species sting. They are distinguished by a number of characteristics including size, color, numbers of nodes on the petiole, range within a specific region, food habits, nesting locations, and whether they are trailing species or not. However, because of their similarities and small size, they are not easily identifiable. To best identify ants, collect a few, place them in alcohol, and forward them to a state or university taxonomist.

2. ARGENTINE ANT

The Argentine ant (Fig. 4-1, next page), native to South America, now widely ranges throughout the United States and the world. This highly adaptable ant is the most common of the trailing ant species that invade dwellings in search of foods; its range is only limited by cold. The Argentine ant has one

node on the petiole, a musty odor when crushed, carries no known diseases, and has no public-health importance. It is very aggressive, has no natural enemies, and drives other ants away; it bites but doesn't attack human beings.

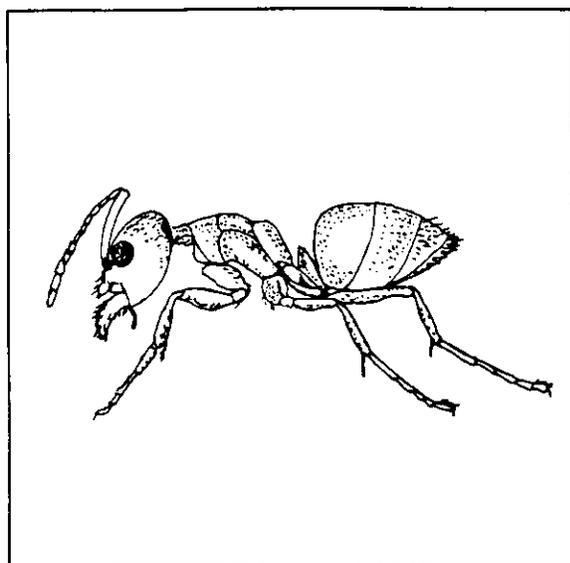


Figure 4-1

Argentine ant nests are usually located in moist areas around refuse piles, under stones or concrete, and in tree holes. In winter, colonies move deep into the soil. Although it seldom nests indoors, nests are sometimes found in buildings near heat sources. This ant is multi-queened, very prolific, and supports large colonies but seldom swarms, because breeding takes place in the nest. The Argentine ant is a major pest in residences, usually seen near baseboards, windows, and water pipes, seeking food or to escape too-wet or too-dry outdoor conditions. It is often found on potted plants because it tends aphids, from which it obtains honeydew. Argentine ants also feed on

termites, other ants, fly larvae, and cockroaches. Argentine ant eggs hatch in 28 days, the larval stage lasts 31 days, the pupal stage lasts 15 days, and complete life cycle is 78 days.

3. THIEF ANT

The native thief ant is one of the smallest of ant species, only about 3/32-inch long. It has two nodes on the petiole and is really smooth and shiny, although it appears somewhat hairy. Thief ants resemble pharaoh ants in size and color but they have a two-segmented club on the end of the antennae, while pharaohs have a three-segmented club. Thief ants range from Canada to the Gulf Coast in the eastern and central United States, but are uncommon in the rest of the country (Fig. 4-2).

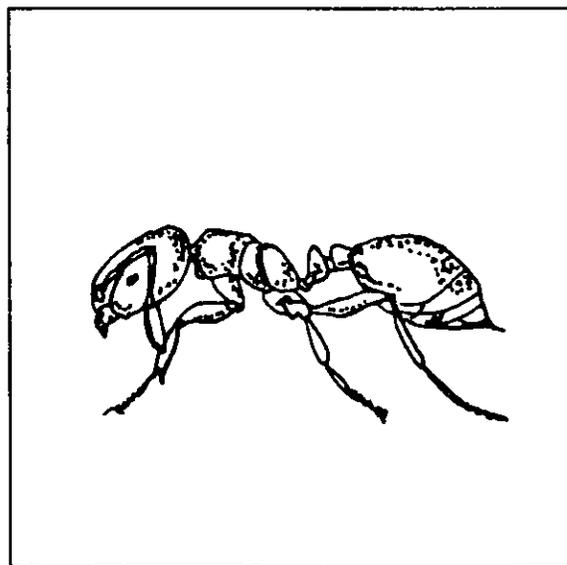


Figure 4-2

This trailing, yellowish to dirty-brown-colored ant usually nests indoors in walls, voids, cracks, and cupboards, and is also found near sinks where it contaminates food and becomes a nuisance. Outdoors, thief ants nest in bare soil, under rocks, logs, or debris, and often near other ant species they prey on. Normally, there is only one queen per

colony, but some colonies are multi-queened. Swarms occur in late spring or early summer.

Their extremely small size permits thief ants to enter containers that other ants cannot, and because of that small size, thief ants may be present in food without being noticed. The thief ant is a persistent nuisance pest which is difficult to control. Although omnivorous (feeding on insect larvae, seeds, and honeydew), it prefers greasy and high-protein foods (meats, cheese, grains, fats, or live and dead insects) but will not eat sugar.

4. PHARAOH ANT

Originally from the African tropics, the pharaoh ant is a trailing species with two nodes on the petiole, twelve segments in the antennae, and a three-segmented antennal club. It's color is yellow-to-red, and is 1/10 to 1/16-inch long. This ant forms extremely large colonies (a million or more workers) and is becoming a dominant indoor pest because of its broad-based diet and habit of colony budding. Infestations may be already established months before being recognized. Pharaohs are one of the few North American ants that are active all year long (Fig. 4-3).

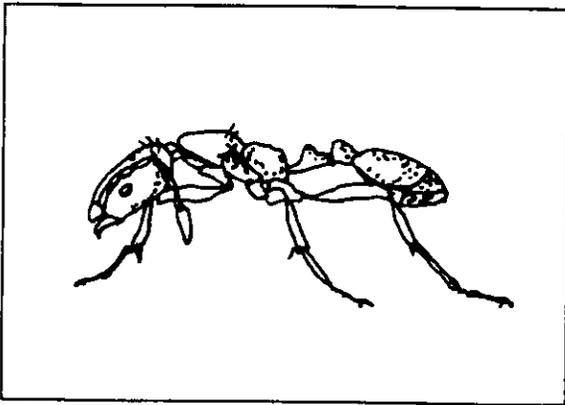


Figure 4-3

The pharaoh ant prefers to nest at temperatures between 80 and 86 degrees F. In the South, it sometimes nests outside, from which base it invades buildings. In the North, pharaoh ants do not nest or survive winter outdoors. Indoors, this is a species commonly transferred between buildings in furniture, food packages, laundry, and other items. Indoor nests may be found by examining areas adjoining heating systems and searching for ant trails near hot-water pipes.

Although pharaoh ants forage on many household foods (they are especially fond of mint-apple jelly), worker ants need protein and carbohydrates (from dead insects, meats, blood, and honey). A constant food source seems important for pharaoh ants, since removing the food source has sometimes caused pharaohs to leave the building. Pharaoh ants penetrate packaged food and may gnaw holes in silk and rubber. Sources of moisture draw foraging ants to kitchen and bathroom faucets, dishwashers, and water coolers.

This ant is extremely difficult to control in residences because colonies tend to multiply (or bud) when treated with chemicals. Since most buildings provide abundant habitat, budding often produces more colonies than the original one that provoked the use of pesticides.

The entire life cycle of workers is complete in 38 to 45 days at room temperature, and life span is about 60 to 70 days. There may be twelve or more pharaoh ant colonies in a building; however, only ten percent of the workers forage for food or water at any given time.

5. PAVEMENT ANT

Pavement ants, originally from Europe and Asia, are distributed mostly in urban areas. They are common along the Atlantic seaboard, less common in the southern states, and uncommon inland except in large cities such as Cincinnati and St. Louis. Pavement ants are rarely found in California. Although this ant does not compete well with native ants in rural areas, its range seems to be increasing.

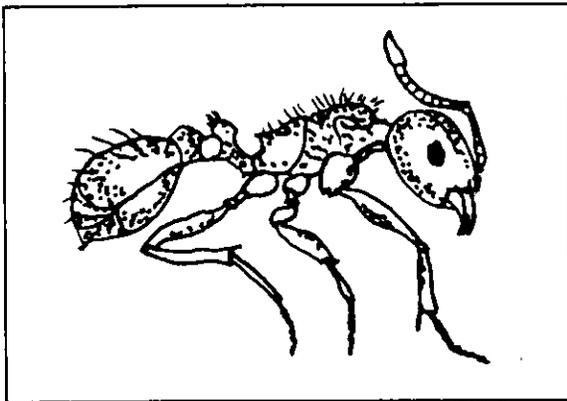


Figure 4-4

The pavement ant (Fig. 4-4) is a small, 1/8-inch long, blackish-brown species with two nodes on the pedicel, a twelve-segmented antennae, a shiny abdomen, dull red-brown head and thorax (caused by minute, but easily visible parallel grooves), and pale legs and antennae. The thorax bears two small spines on the top rear. Most complaints about small ants are caused by annoying pavement ants which invades homes throughout the year, especially during summer, and get into everything from food to shoe polish.

Pavement ants nest outside under rocks, next to pavement edges, and on door stoops and patios, but also establish colonies inside buildings between foundations and sill plates. This species enters homes through heating ducts, cracks in the slab, and other open areas, and nests in wall voids and bath-trap areas.

Pavement ants store debris (such as sand, seed coats, dead insect parts, sawdust from house construction) in the nest, which the workers dump out when the nest needs to be expanded. This material is often seen in small piles on the basement floor (it should not be confused with carpenter ant frass). Pavement ants normally swarm in late-spring, but large swarms may originate inside heated structures at any time of year.

Pavement ants are omnivorous scavengers with few food preferences, but they seek sweet and greasy materials, dead insects, and seeds. Outside, they tend honeydew-producing insects, and are often pests on eggplants, peanuts, and strawberries. Closely related, trailing species are often introduced

via tropical plants into dwellings, where they flourish in warm, moist environments.

6. ODOROUS HOUSE ANT

The odorous house ant (Fig. 4-5) is a trailing, nonstinging, native species that occurs in all 48 continental states from sea level to over 10,000 feet in elevation. It has a single node on the petiole, is brownish to black in color, and 1/8-inch long. Colonies are multi-queened and seldom swarm. Except for the Argentine ants in their primary habitat, the odorous house ant is probably the most common found in North American buildings. It is primarily distinguished from the Argentine ant by a darker color and unpleasant odor when crushed.

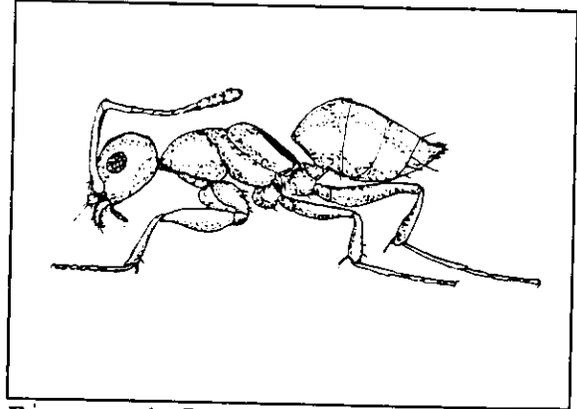


Figure 4-5

Outdoors, odorous house ants tend honeydew-producing insects. Inside, workers prefer sweets but, strangely, sweet baits are seldom effective in control. Although this ant may invade residences at any time of the year, it becomes an indoor pest at the start of the rainy season, when aphids and honeydew are washed down from plants by rain, and then again late in the year when leaves fall.

Odorous house-ant nests outside are usually shallow and located under boards or stone. Indoors, the nests are found in walls, woodwork, under floors (especially around heat sources), and sometimes in old termite tubes. Nesting sites should be treated if controls are to be effective.

SECTION B HAZARDS OF INFESTATION

Regardless of damage, ants are generally considered to be beneficial. Like spiders, ants kill and eat many insects, including flea and fly larvae, bedbugs, and subterranean termites. Ants are important in soil aeration and recycling of dead animal and vegetable materials. However, their control in households is necessary because they contaminate food, damage structures, and some (pharaohs) transmit disease organisms. Several ant species, for instance pavement ants, are annoying because of their painful stings.

1. THIEF ANTS

Thief ants rarely sting human beings and even when they do, due to their small size, the stings are insignificant. Large numbers of thief ants, however, may kill small chickens; further, this ant is an intermediate host for the poultry tapeworm.

2. PHARAOH ANTS

Pharaoh ants prey on bedbugs, and pose significant health threats, especially in hospitals. They may carry more than twelve different pathogenic disease organisms picked up from bedpans, toilets, drains, and washbasins. Once the ants are infected, pathogenic organisms quickly spread through the colony from direct contact as well as through food exchange.

3. PAVEMENT ANTS

Pavement ant workers bite or sting, which cause allergic reactions and rash.

SECTION C INSPECTION AND MONITORING

The basic need in exterior inspections is to find and correct breaches where ants are entering the dwelling from outside, as described in Chapter Five, Section D—Cockroach Controls. The only difference is that ant entry sites are much smaller than those for roaches, and require more care to find holes unless lines of trailing ants can be found. The following are offered to assist in interior ant inspections:

- Study ant trails and identify where they are entering the space. Place bait stations or sticky traps which attract ants, and count their numbers and times when they are at stations. Determine if ants are nesting inside or outside, and what food and water sources are attracting them.
- Inspect flower pots for possible ant nests; inspect under carpet edges, behind baseboards, inside heat registers and ducts, and bath drain-trap areas.
- Find, map, and count nests and use that and other information to select controls.
- Carefully inspect foundations, areas behind insulation, and under grass, mulch, rocks, and logs for possible nest sites and trails.
- Take good notes and use them to plan effective control.

SECTION D ANT CONTROLS

1. MAJOR MISTAKES

Major mistakes usually made in ant control are:

- Failure to accurately identify the ant so that its biology can be used to control it. For example, attempting chemical control of worker ants (for example, pharaoh ants) without first killing or sterilizing the queen results in nest division and greatly increases indoor problems.
- Failure to exclude ants through caulking and sealing, removing vegetation "ladders," and preventing importation of ants on vegetation or potted plants.

- Failure to thoroughly inspect the building to find nests and sterilize or kill the queen or queens.
- Attempting to treat only the five to ten percent of worker ants seen foraging without controlling the colonies.
- Failure to treat contributing conditions such as damp wood, bad sanitation, poor crawl space ventilation, and over-watered or aphid-infested potted plants.

2. PREVENTION OF ANT INFESTATIONS

Established ant infestations can be difficult to control. The best control is good sanitation practices, which eliminates the conditions attracting ants. Although practices are not different from those required for cockroach control (see Chapter Five—Cockroaches), the following are very important to follow:

- Clean up all food particles after meals, and frequently sweep, vacuum, or mop up all scraps, lint, or dead insects.
- Store all ant-attracting food in pest-proof plastic or glass containers or, if possible, in the refrigerator.
- Rinse all food residues from glass, metal, or paper food containers before discarding them in trash containers; wash meat and fast-food wrappings in dishwater before discarding. Do not leave dirty dishes on counters; if they cannot be washed immediately, immerse them in soapy water.
- Thoroughly rinse garbage disposal after use and put a lid on it.
- Use tight-fitting garbage receptacles and take the garbage out every night.
- Trim back vegetation and trees next to buildings that harbor ants or aphids.
- Keep bowls of pet food and water empty and as clean as possible.
- Don't import ants into the home: carefully inspect all cardboard boxes, bags, and sacks before bringing them inside to be sure they do not contain ants.
- Eliminate all sources of water for ants; check and repair leaking or dripping faucets and plumbing; keep kitchen sink and cupboard surfaces dry; repair wood surfaces that have been damaged by water and could attract carpenter ants.
- Remove all old and decomposing wood debris, shrubs, or tree trunks that could provide nesting possibility for ants; control honeydew-producing insects.

3. CONTROL OF ANT INFESTATIONS

a. Action Thresholds

Because ants readily communicate the location of food and water sources to other members of the colony, it is imperative that ant control begin immediately upon seeing them feeding on food sources in the dwelling. The initial response may be to follow the line to and seal up the point of entry, or to remove the food attraction. The presence of swarming or winged ants should

always suggest the presence of nests indoors, and the kind of ant and possible nest location should be determined.

b. Physical, Mechanical, Cultural Controls

Limiting Entry: The basic "Rule of Thumb" in ant control is exclusion not eradication. Simply killing worker ants seldom controls a colony and may, indeed, result in colony multiplication. The following exclusions are suggested:

- Place sticky barriers (Stickem or Tanglefoot) on legs of free-standing tables and furniture or place table legs in cups of water.
- Caulk all interior and exterior cracks and crevices; ants will stop coming into structure when the distance from the nest to food becomes too long.
- As an additional precaution, dust cracks with boric acid, diatomaceous earth, or silica aerogel before caulking.

Physical and Mechanical Controls:

- Sponge mop with soapy water or vacuum to remove trailing ants. Soapy water washes away trailing odors and forces ants to find other food sources.
- Boiling water poured into holes that are probed into ant nests is somewhat effective against harvester and carpenter ants.

Using old-fashioned remedies like scattering mint or pennyroyal around shelves, planting tansy, or coating points of entry with powdered bone meal, charcoal, cayenne pepper, or lemon juice have not proven effective.

Heat Sterilization: If the affected items can tolerate it, equipment, rooms, and furniture infested with ants can be sterilized by steam cleaning or dry heat (130 degrees F for 30 minutes).

c. Pesticide Treatments

Chemical controls generally provide only temporary relief from pests in buildings. Moisture, heat, soap, and grease, which are common in kitchens, quickly render most insecticides inert. When chemicals dissipate, ants often re-invade dwellings. Exterior sanitation should be used in combination with interior treatment and good sanitation. Chemical treatment should be aimed at destroying the nest or sterilizing the ant queen. Follow-up monitoring will determine whether additional treatments are necessary.

Before any chemical control is applied, it is vital to know the kind of ants present, what they are

feeding on, and whether their nests are located indoors. Boric acid dusts and sprays are very effective chemical treatments, which are applied through a narrow-diameter tube into harborage cracks and crevices of ants and other pests. Boric acid dust may also be applied under furniture and in drawers, voids, under sinks, in high cabinets, and around pipes. When applying in cabinets, be sure to remove utensils and supplies, and apply dust only in cracks, not on shelf surfaces. Use only refined, pesticide-grade, 99% boric-acid dust for pest control.

Boric acid dust is harmful to breathe; therefore, a dust mask, goggles, and gloves should be worn. Various brands and formulations of boric acid are commercially available, some in aerosol carriers, making application to small cracks easier. Boric acid requires seven to fourteen days to kill ants, but it remains active for a long time. It is carried into the nest where it is ingested by the queen during grooming. Caulk cracks and crevices after inserting boric acid into them to eliminate future harborage areas and keep the chemical dry.

Various types of solid, semi-solid, and liquid ant-bait stations are commercially available. Many contain low-risk chemicals like boric acid that are readily taken into the nest and to the queen. These baits are attractive to ants, and help to control ant populations. Place stations along ant trails where ants quickly find them. However, where sanitation is poor, bait performance will also be poor because of the availability of alternative food sources.

END OF CHAPTER FOUR