



Defense Supply Center Philadelphia  
West Coast Support Office  
Alameda, California

# Pest Facts

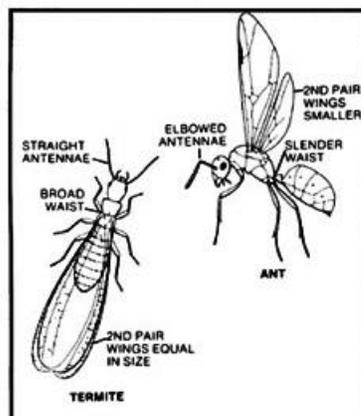
---

## Ants

Although only 10 of approximately 10,000 ant species worldwide are considered pests in the United States, managing an infestation is often very difficult. Designing an effective program is dependent on accurately identifying the ants to determine their biology, behavior, and most importantly, the location of the nest (the inability to locate a colony is the primary reason for program failure). The following information describes basic ant biology and behavior. For assistance in identifying ants or designing an ant management program, please contact the Defense Supply Center Philadelphia-West Coast Support Office at (510) 337-8122, DSN 686-8122 or email [paa5245@exmail.dscp.dla.mil](mailto:paa5245@exmail.dscp.dla.mil).

### Basic Ant Anatomy

There are several kinds of ants that are commonly encountered ranging in size from about 1/32" to 3/4" long and colored yellowish, light brown, reddish-brown, brownish-black or jet black. Ants, as all insects, have three body parts; head, thorax and abdomen. Most are wingless, but you may sometimes confuse swarming, winged ants with swarming, winged termites, causing alarm. Ants can be easily distinguished from termites by several characteristics:



-Ant bodies appear constricted or pinched in at the waist (shaped like a figure eight), while termites do not have the waist constriction.

-Ants have elbowed antennae, while termites have straight, bead-like antennae.

-The forewings of ants are much larger than the hindwings. Termites' wings are equal in size and shape.

-Ants wings are transparent or brownish, while termite wings are milky-white or grayish and longer than the body.

-Ant wings are firmly attached, while termite wings are easily removed or shed.

### **Biology and Behavior**

Ants are social insects. Three castes (workers, queens, and males) are found in most colonies. Worker ants, which are sterile females, are seldom winged. They often are extremely variable in size and appearance within a given species (monomorphic-one form; dimorphic-two forms; polymorphic-many forms). The function of the worker is to construct, repair, and defend the nest; and feed the immature and adult ants of the colony, including the queen.

Queens normally have wings but lose them after mating. The primary function of the queen is reproduction; however, in some of the more highly specialized ant groups, the queen cares for and feeds the first generation of workers with her saliva. The queen may live for several years and is usually replaced by a daughter queen. Depending on the species, ants can have one or more queens.

The male is usually winged and retains its wings until death. The sole function of the male is to mate with an unfertilized female reproductive. After mating, the male dies. Males are produced in old or very large colonies where there is an abundance of food. After reaching maturity, the male usually does not remain in the colony for very long.

Ants have an egg, larva, pupa, and adult stage. Eggs are almost microscopic in size and hatch into soft leg-less larvae. Larvae are fed by workers on pre-digested, regurgitated food. Most larvae are fed liquids, although some older larvae are able to chew and swallow solids. The pupa resembles the adult except that it is soft, uncolored and immobile. In many ant species the pupa is in a cocoon spun by the larva. Six weeks to 2 months are required for development in many species.

Ants establish new colonies by two main methods: flights of winged reproductives and budding. The most common method is for male and female reproductives to leave the nest on mating flights. The mated queen constructs a cavity or cell and rears a brood (generation) unaided by workers. The small first brood workers than forage (search) for food. The colony grows in size as more young are produced.

Budding occurs when one or more queens leave the nest accompanied by workers who aid in establishing and caring for the new colony. Some of the most difficult ant species to

manage spread colonies by budding. Pharaoh ants, and some fire ants, ghost ants, and Argentine ants spread colonies by budding.

### **Food Preferences and Trailing**

Most ants will eat a variety of foods, although some have specialized tastes. Fire ants feed on honeydew, sugars, proteins, oils, seeds, plants and insects. Pharaoh ants feed on sugars, proteins, oils and insects. Crazy ants like sugars, protein and insects, while carpenter ants prefer sugars and insects.

Communication between ants is based on chemical signals. These chemicals are called pheromones and vary from alarm and nestmate recognition to recruitment (collection of individuals to follow). All of the pest ants use odor trails for orientation, but these trails differ from one species to another. Where the pheromones originate in the ant's body, their chemical composition, as well as how long they last, all vary from one ant species to the next. For example, in fire ants, the trail chemical is produced by the Dufour's gland, which is named after its discoverer, Dufour, and is laid down by the stinger. This pheromone is made up of molecules which evaporate very quickly. Thus, the fire ant's odor trail is very short-lived. In comparison, the trail pheromones of some carpenter ant species, which are produced by the hindgut, will last for days.

#### *The process*

A scout ant in search of food leaves the nest, in a random search pattern, until she finds food. Somehow on the outgoing trip she can keep track of her position with respect to the nest, and, on the return trip, uses this information to take a shorter, more direct route home. On the way back to the nest, she lays down an odor trail. Once back at the nest, this scout ant then alerts her nestmates of the food, which encourages them to leave the nest. These recruited ants will follow the odor trail directly to the food source. In turn, each ant will reinforce the odor trail until the food is gone. In some instances, these odor trails can become more or less permanent, as in the case of ants that are visiting permanent food sources. The trail can even be physically cut into the turf, as with carpenter ants that chew their way through the thatch layer.

Structural guidelines are another type of trail that ants use to orient in their natural environment. These may include twigs and branches which ants use to travel to and from the nest. Traveling along a branch lying on the forest floor is much quicker than negotiating a path through grass or leaf litter. In the man-made structural environment, guidelines consist of pipes, conduits and other utility lines. Ants follow these guidelines to enter structures as well as to travel within them. These structural guidelines serve as natural highways for ants

Trailing along these chemical or structural guidelines is an important behavior of ants that can be exploited for management purposes. In inspections, trailing ants should be observed carefully to determine where they are getting into structures. Through close observation, the source of the infestation can be located. One can feed wandering ants a little honey or pieces of insects and then follow them directly back to their nest site.

## COMMON SPECIES

### *Carpenter Ant*

**Identifying Characteristics:** Workers have one segment (node) in the pedicel, and the profile of the thorax is evenly rounded. Workers are polymorphic, varying in size from 1/4" (6 mm) to more than 5/8" (15 mm). The queens may be up to 3/4" (18-20 mm) in length.

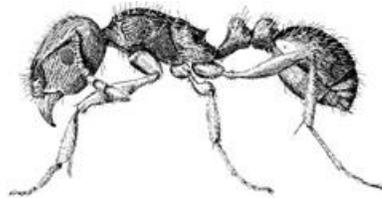


**Biology and Habits:** These long-legged, swiftly moving ants are among the largest ants found invading buildings for foraging or nest-building purposes. The colony is ordinarily started by one queen, who begins the nest beneath a rock or in the soil, a tree hole, in an insect-bored tunnel in a tree, etc. If conditions remain suitable, the colony thrives. When the nesting site is in wood, it often resembles an ornate carving due to a variety of galleries. The carpenter ant ordinarily excavates that portion of the wood which is softened by decay of attack by other insects

Main colonies of carpenter ants are commonly located in trees surrounding an infested structure. Tree hollows, tree holes and dead limbs are the most common nesting sites. These ants will forage up to 300 feet from the nest. Scent trails are laid between food sources and the nest.

### *Pavement Ant*

**Identifying Characteristics:** Workers are monomorphic with two segments (nodes) in the pedicel; 1/10 to 1/8" (2.5-3 mm) long. Antennae are 12 segmented with a 3-segmented club. The thorax has one pair of spines, and a sting is present at the abdomen's tip. Head and thorax is highly sculptured, with numerous grooves running lengthwise. Body color is dark.

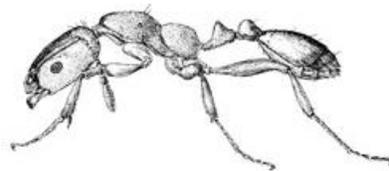


**Biology and Habits:** The pavement ant is one of the major structure-invading ants in the Northeast and Midwest. It is only second to carpenter ants in homes in these regions and in the number one pest in commercial structures. Pavement ants look for food inside heated buildings throughout the year, although they are observed in greatest numbers during the summer. Activity on counters and around trash containers is most common, and any bit of food dropped on the floor can be attacked in a short time.

This ant derives its name from its habit of nesting beside and under sidewalks, driveways and building foundations. In areas where this ant is prevalent, any mound of displaced soil on or along paved areas is likely to be a pavement ant. The nests are found outdoors under stones, along the edges of curbing and in cracks in the pavement, especially when next to a lawn. During the winter, the ants often nest in buildings in crevices near a heat source such as a radiator or heat ducts.

#### *Pharaoh Ant*

**Identifying Characteristics:** Workers are monomorphic; however, they vary slightly in length from about 1/16 to 1/2" (1.5-2 mm) and they have two segments (nodes) in the pedicel. The color varies from golden yellow to red, with black markings on the top rear portion of the abdomen. The antennae are 12-segmented ending in a 3-segmented club. Although present, the sting is rarely exerted and visible. Queens are larger, 3/16" (5 mm) than workers and are a darker, reddish-brown in color. Queens are numerous in colonies and may be seen moving with workers along trails.



**Biology and Habits:** The distribution of food within a pharaoh ant colony is very important to the development of effective baits. A recent study showed that table sugar and beef fat were generally ignored as a food source but moist egg yolk powder and sucrose (sugar) solution was readily exploited. Mint jelly and egg yolk baby food are often used by pest managers for pre-bait monitoring to detect pharaoh ant activity

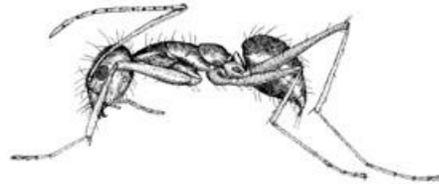
Pharaoh ants will occupy nearly any crack or crevice which has a suitable climate; warm, moist such as found in kitchens and bathrooms. Outside of these areas, pharaoh ants are found near heating pipes, radiators, sinks, drains and toilets

Pharaoh ants are most active during the evening hours where they are observed foraging in large numbers to any available food source. Inside, trails are often hidden behind baseboards and cabinetry. The most common avenue used to travel from room to room is inside of walls following wiring and plumbing pipes. Pharaoh ant trails are often observed existing from behind electrical outlet plates and from plumbing penetrations into walls. Common sites to find trails when inspecting for pharaoh ants are in bathrooms and kitchens along counters, sinks and bathtubs, inside cabinets and vanities, inside and

around dishwashers and inside pantry closets. Outside, trails are often observed around windows and doorways following along the edges of bricks and siding.

### *Crazy Ant*

**Identifying Characteristics:** Workers are monomorphic, 1/10" (3 mm) long and have one node in the pedicel. Profile of the thorax is not evenly rounded. The first long segment of the antenna (scape) is more than twice the length of the head. Legs are also slender and very long relative to the body size. Body color is dark brown to black.



**Biology and Habits:** The crazy ant derives its name from its movement-appearing to run about aimlessly with no easily discernable trail. The ant is unresponsive to most commercially available baits and satellite colonies are often difficult to locate and treat inside buildings.

Like most ant pests, the crazy ant is highly adaptable and opportunistic in its nesting habits. Outside, it is a soil-nesting ant which excavates shallow galleries under stones, boards, patio blocks, firewood, etc. Commonly located within landscape mulch and behind thick vegetation. In buildings, colonies are found within wall voids and under carpeting and are also common in potted plants.

Crazy ants do have established trails but sometimes these are not easily identifiable. Sightings of this ant inside buildings can often lead a manager on a long search along baseboards, across carpets, up walls, across ceilings, over window sills, and along sidewalks back to a landscaped area or a crack in a brick wall where the colony is located.

### *Acrobat Ants*

**Identifying Characteristics:** Workers are monomorphic, 1/10 to 1/6" (2.5-4 mm) long. Antennae are 11 segmented with a 3 segmented club. The petiole has two nodes which are attached to top of the heart-shaped abdomen. Body color is variable from light brown through black.



**Biology and Habits:** In most areas, acrobat ants are only occasional pests within buildings. They are found beneath stones, in old tree stumps and tree holes. Their peculiar habit of raising the abdomen over the head and thorax when disturbed has given rise to the name “acrobat.” At times, these ants invade buildings for food and may use power lines or tree limbs to gain access. When disturbed, workers readily defend the colony, giving off a pungent odor and will bite. Where colonies are large, the ants are aggressive, stinging and biting. When the colony is small, the workers are passive. Acrobat ants will feed on most things but prefer sweets.

Many acrobat ant infestations indoors originate from outside. Colonies locate inside when moisture or insect-damaged wood is present. Many times, an ant trail can be followed back to a tree, stump, or log outside. This ant also has a preference for foam used in building materials.

#### *Thief Ant*

**Identifying Characteristics:** Workers are monomorphic with two nodes in the pedicel. They are tiny (1/16-1/3”) in length. Antennae are 10-segmented with a 2-segmented club. The first antennal segment is only half the length of the head. Body color ranges from light yellow-brown to dark brown.



**Biology and Habits:** Thief ants often live in association with the nests of larger ants. They enter the other ants’ nests by means of tiny passages that are too narrow for the larger ants. The thieves move about the chambers killing and eating the immature forms of the host ant. The thief ant is attracted to greasy materials, such as cheese and animal matter.

Thief ants nest in walls and in cracks and voids of food service area cabinetry. The nests occur in a great variety of locations outside the home, particularly under rocks. They search for food in set trails and will use electric wires in walls to move from room to room. Their trails are often found in the same locations as pharaoh ants and can be easily confused with the pharaoh ant because of body similarities.

### *Little Black Ant*

**Identifying Characteristics:** Workers are monomorphic with two segments in the pedicel and measure 1/16" (1.5-2 mm) in length. Antennae are 12-segmented with a 3-segmented club. Body color is shiny black.



**Biology and Habits:** Very little is known about the biology of this ant. Colonies are medium to large in size and contain numerous queens. It is common in wooded areas. Most infestations originate from the outside and can be traced to a stump, tree, log, fence or pile of lumber or bricks.

Like most pest species, the little black ant is highly adaptive. Inside, colonies may occur in wall voids and cabinets and behind foundations, brick and stone veneer.

### **MANAGEMENT OF ANTS**

Designing a management program for ants can be quite difficult. Experience is often the best resource to increase the chances for success. The following, however, provides guidelines to follow when designing a program. For more information, please contact the Entomology Section at DSCP-WCSO.

#### Non-chemical

**Identification:** The correct identification of a suspected ant pest is critical to the success of the management program. Identification allows the manager to know the habits of the ant so the nest sites can be quickly located and treated appropriately. A complete understanding of ant identification is, therefore, essential.

**Inspection:** Once the ant has been identified, an inspection is necessary to determine where the colony is located, where activity is present, whether other ant species are present, and whether contributing conditions exist.

**Pre-baiting-** If ants are not easily found, it may be useful to place small drops of jelly or other materials in suspected areas to help locate the ants. This method works well for many species.

**Following Trails** Ants typically follow defined trails from the nest to food or water sources and these can lead the manager back to the colony's location. Finding that initial trail to follow is sometimes difficult and requires patience. Ants follow structural guidelines along most of their trail. Such guidelines include the edges and corners found on landscape timbers, along sidewalks and along the edges of brick veneer on buildings.

**Displaced Soil-** Soil-nesting ants, such as pavement, fire, big-headed and field ants, all excavate soil to create their nest. Piles of displaced soil are a quick indicator of ant activity whether seen in a lawn, on a sidewalk, edge of a porch or on the floor of a garage.

**Items Lying on the Ground-** Any item lying on the ground could have ants living under it and should be lifted to inspect underneath. Piles of lumber, firewood, bricks or leaves all make perfect sites for many ants.

**Moisture Damaged Wood-** Any wood that contains high levels of moisture is attractive to many ants. Signs of excessive moisture, such as fungi, stains and peeling paint should be investigated.

Contributing Conditions: No management program will have long-term success unless the conditions contributing to the infestation are corrected. Conditions to look for include:

- Trimming tree and shrub branches back from the structure's wall and roof
- Removal of stumps and dead tree limbs
- Repair water leaks
- Improve drainage around the building
- Clean clogged gutters
- Improve sanitation inside and outside
- Seal cracks and crevices

Chemical: A variety of insecticides are labeled for ant control and are effective when directed to the area of ant activity, particularly the mound (colony). Before deciding on any pesticide application, consult a pest management professional for additional information.

This publication contains general recommendations that are subject to change and update. For additional pest management information on ants not described in this publication, please contact the Entomology Department at the Defense Supply Center Philadelphia-West Coast Support Office, Alameda, California. DSN 337-8122, Commercial (510) 337-8122, email paa5245@exmail.dscp.dla.mil.

Disclaimer: The mention of any product or service within this publication does not constitute endorsement by the United States Government, Department of Defense, Defense Logistics Agency or the Defense Supply Center Philadelphia.



