

## Ants<sup>1</sup>

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### Introduction

Ants are pests around the home because they feed on and contaminate human foods, infest structures, and build unsightly mounds in lawns. In some cases, ants are able to inflict painful bites or stings. Ants do not attack or eat fabrics, leather or wood in houses; however, some species can establish nests in decaying wood in structures.

Several species of ants are found in or around houses in Florida. In general, the most common ants can be grouped as house-infesting ants, yard-infesting ants, and carpenter ants. The most commonly encountered pest ants are pharaoh, ghost, carpenter, native fire, imported fire, crazy, thief, acrobat (Figure 1), and big-headed (Figure 2) ants.

### Identification

Ants can be recognized from other insects because they have a narrow waist with one or two joints (nodes) between the thorax and abdomen. Also, ants have elbowed antennae. Winged



**Figure 1.** Acrobat ant. Credits: James Castner, University of Florida

reproductives have four wings with the first pair being much larger in size than the hind pair.

Ants are frequently confused with termites. However, termites have a broad waist between the thorax and the abdomen. Termite reproductives have four wings of equal size.

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**Figure 2.** Big-headed ant. Credits: James Castner, University of Florida

## Biology

Ants are social insects. Two castes (workers and reproductives - females and males) can be 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.

Reproductive females normally have wings but lose them after mating. Therefore, queens do not have wings. The primary function of the queen is reproduction; however, in some of the more highly specialized ants the queen cares for and feeds the first brood of workers on her salivary secretions. The queen may live for many years and in some species is 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 occurs, 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 doesn't remain in the colony very long.

Ants have an egg, larva, pupa, and adult stage. Eggs are almost microscopic in size and hatch into soft legless larvae. Larvae are fed by workers, usually on predigested, regurgitated food. Most larvae are fed liquids, although some older larvae are able to chew

and digest 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 from egg to adult in some 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 unaided by workers. The small first brood workers then forage for food. The colony grows in size and numbers 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 control spread colonies by budding. Pharaoh ants (Figure 3), some kinds of fire ants (Figure 4), ghost ants (Figure 5), and Argentine ants (Figure 6) spread colonies by budding.



**Figure 3.** Pharaoh ant. Credits: James Castner, University of Florida



**Figure 4.** Imported fire ant. Credits: James Castner, University of Florida



**Figure 5.** Ghost ant. Credits: James Castner, University of Florida



**Figure 6.** Argentine ant. Credits: James Castner, University of Florida

## Food Preferences

Most ants eat a wide variety of foods, although some have specialized tastes. Fire ants feed on honeydew, sugars, proteins, oils, seeds, plants and insects. Pharaoh ants (Figure 3) feed on sugars, proteins, oils and insects. Crazy ants (Figure 7) like sugars, protein, and insects; carpenter ants prefer sugars and insects.



**Figure 7.** Crazy ant. Credits: James Castner, University of Florida

Ants use scouts to locate food. When a scouting ant finds promising food, she carries it or a piece of it back to the nest. Some ants leave scent trails that others can follow to the food source. Ants require water and will travel some distance for it if necessary. Workers are able to bring water to the colony in their guts.

Despite their name and where they are found, Florida carpenter ants (Figure 8) do not eat wood (as is the case with termites) but excavate galleries in it to rear their young. They feed on honeydew from sucking insects and household food scraps and do not damage sound wood to any extent.



**Figure 8.** Florida carpenter ant. Credits: James Castner, University of Florida

## Control

**Prevention.** Prevention is the best line of defense against the establishment of any pest insect. Relatively small ants, such as the white-footed ant (Figure 9) can fit through extremely small openings to gain access into the home. If these entry points can be located, they can be blocked by application of caulk or some other exclusion device. This can also help to prevent other insects from gaining access into your home.

The best approach to ant control in the home is cleanliness. Any type of food or food particles can attract and provide food for ants. Store food in tight containers. Remove plants that can attract ants or control aphids, whiteflies and other insects that produce honeydew. Reduce moisture sources, including condensation and leaks.

**Inspection.** Location of the nest is the key to control because ants are social insects. Large



**Figure 9.** White-footed ant. Credits: Japanese Ant Color Image Database

numbers of individual ants can be killed without ever solving the problem. Determine the kind of ant infestation. Most species of ants never enter buildings; others build their nests near buildings and forage indoors. Others usually nest indoors.

Keep a record of where ants have been seen. Some ants follow definite trails. If possible, follow these trails to the nest. Placement of attractive materials, such as jelly, oils, protein and other materials can attract large numbers of ants so they can be followed to their nest.

Often children like to watch ants and can be very useful in tracing their trails. Outdoors, ant nests can often be located by seeing ant hills on the ground. Some ants deposit earth on the soil surface when they construct the nest. Fire ants and certain other ants build conspicuous mounds. Nests may also be constructed next to or under the house foundation, under sidewalks, driveways and patios, or in decaying logs or tree trunks.

Indoors, ants may nest in walls, behind a baseboard or under the house. Often ant trails enter through a crack but the nest may be some distance away. Some ants may also nest in decayed or rotting wood in the house.

**Chemical Control.** Ants can be controlled with baits, crack and crevice treatments, indoor space and surface treatments, outdoor barrier and broadcast treatments, as well as void and attic treatments. However, methods that target individual trails of ants such as crack and crevice treatments and indoor space and surface treatments are usually a “quick fix” and ineffective in the long term because they do not significantly reduce the ant population and do not affect the queen.

Ant baits, however, were developed to exploit the foraging and nest mate feeding behaviors of ants. Bait treatments are effective for control of many ant species and are available in homeowner and professional product versions. Since ants rely heavily on trophallaxis (reciprocal feeding), the bait toxicant can be thoroughly distributed to the members of the colony, including the queen and brood. Baits are effective because they not only kill the foraging members of the colony, but they kill the queen(s) so no other ants are produced.

The ideal bait contains a slow-acting, non-repellent toxicant that is incorporated into a preferred food substrate. There are many types of baits on the market. Some baits contain:

- Insect growth regulators that primarily impact brood production and development (Extinguish, Award, Distance, etc.)
- Metabolic inhibitors that primarily kill the foraging workers, the brood and queen (Amdro, Combat, etc.)

In general, ant baits can be found as:

- Granules for broadcast
- Liquids
- Gels
- Ready-to-use, tamper resistant containers

Both granules and liquids can be used in specially designed stations. Liquids are usually prepackaged for use or come as part of a system that uses a bait station. Gel baits usually come prepackaged in large syringes for crack and crevice treatments.

For large areas, the most efficient management method is to broadcast bait with a granular. Granular ant baits can be broadcast in the landscape around structures and in lawns. Most granular baits that are labeled for broadcast use are also labeled for individual mound or nest treatments.

Use the following guidelines for successful baiting:

- Use the following guidelines for successful baiting:
- Use fresh bait. If the bait is not fresh, ants will be less likely to eat it. Ants must eat the bait in order to be effective. If the bait smells like rancid oil or stale potato chips, the bait is spoiled.
- Wash your hands before baiting to prevent contamination from other products (and after baiting).
- Do not smoke while baiting. The nicotine will contaminate the bait.
- Timing of the application is as important as the choice of control. Granular broadcast applications should be done in good weather. A good rule of thumb is to bait on a day that you would have a picnic; about 70 to 90°F and not immediately before or after a drenching rain. Also, turn off any irrigation for a few hours before and after baiting.
- Bait after the dew, rain or irrigation has dried. Water can ruin baits.
- Bait where you see the ants foraging.
- Store bait in an airtight container and place in a cool dry place, away from other pesticides or potential contaminants.

Gel baits are particularly useful in crack and crevice treatments. In all cases of bait use, do not spray any insecticides around the bait application. Sprays are repellent and if they contaminate the bait, the bait treatment will be ineffective because the ants will not eat it.

Baits are effective for many sweet-feeding ant species. However, they provide control only if ants ingest them. Management of some ant species has been accomplished by treating infested homes exclusively with baits that contain boric acid. A 1 percent boric acid concentration in sugar water seems to be effective. However, a lot of bait may need to be dispensed and made available to ants over several weeks. Baits may need to be placed outside of the structure rather than indoors.

Residual insecticide sprays, applied outside the home as a barrier can provide temporary relief from invading ants. Ants that cross the barrier do not die immediately but at some point they will die and carcasses may be found within the home. In addition, foraging and nesting ants in the landscape should be treated. For example, if ants are observed moving up and down the trunk of a tree, the trunk should be treated. After the effectiveness of the chemical barrier has subsided, ants may continue to forage inside.

For more details on baiting, see “Ant Trails: A Key to Management with Baits,” ENY-259.

For heavy infestations, we recommend the Florida 3-Step Program.

1. Treat the perimeter with a repellent liquid or granular insecticide.
2. Broadcast bait with the appropriate product for your ant problem.
3. Individually treat remaining infestations, whether they are indoor or outdoor, such as fire ant mounds.