

## **Ghost Ant, *Tapinoma melanocephalum* (Fabricius) (Insecta: Hymenoptera: Formicidae)<sup>1</sup>**

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### **Introduction**

The ghost ant, *Tapinoma melanocephalum* (Fabricius), is an invasive ant important as a pest in houses and other structures within Florida. Field populations were originally confined to South Florida but active colonies are found in many areas in Florida, as well as in other states. By 1995, the ghost ant was common in central and southern Florida and had been elevated to major pest status (Klotz et al. 1995). In more northerly states, infestations are confined to greenhouses or other buildings that provide conditions necessary for survival, as the ant is a tropical species either of African or Oriental origin (Wheeler 1910). However, this introduced ant species is so widely distributed by commerce that it is impossible to determine its original home (Smith 1965).

### **Distribution**

The ghost ant is associated with a complex of ant species known as "tramp ants" that is widely distributed in tropical and subtropical latitudes



**Figure 1.** Ghost ant worker, *Tapinoma melanocephalum* (Fabricius). Credits: J.L. Castner, University of Florida

worldwide. In fact, *T. melanocephalum* was once referred to simply as the "tramp ant." Colonies of *T. melanocephalum* are reported from such isolated locations as the Galapagos Islands (Clark *et al.* 1982). In temperate latitudes, the ghost ant is reported established in greenhouses and other buildings with favorable conditions, even as far north as Winnipeg, Manitoba, Canada, where a colony nested in an apartment block on the Assiniboine River (Ayre 1977). Ghost ants populations and infestations are

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reported in many areas of the United States, as well as in Canada, Puerto Rico and the Caribbean Islands.

In the United States, the ghost ant is well established in Florida and Hawaii, and its range is expanding. The ant reached Texas in 1994 or 1995, probably through Galveston on a shipment of plants from Florida (Chenault 1997). In the northern states, it can only survive in greenhouses and other heated environments (Smith and Whitman 1992).

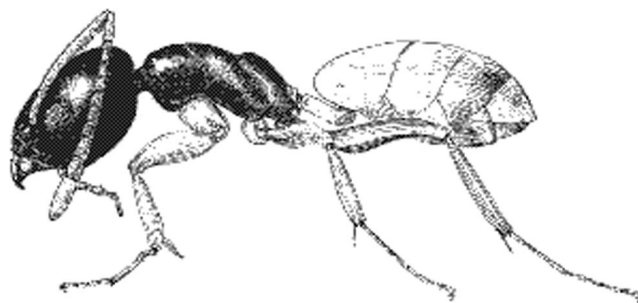
In Florida, the larger populations of ghost ants are found from Sarasota to Orlando and south, although it has been reported from Gainesville in Alachua County (Beauchamp 1997, Klotz *et al.* 1995), Duval County (Mattis *et al.* 2004), and other areas in northern Florida.

A survey conducted in the early 1990's with Florida structural pest control employees to determine the kinds of ants and types of ant problems confronted in both commercial and household pest control revealed that eight species of ants were identified as key pests in Florida. Of these, the most common were the red imported fire ant, *Solenopsis invicta* Buren, the ghost ant, *Tapinoma melanocephalum*, (Fabricius); and the crazy ant, *Paratrechina longicornis* (Latreille). Each species comprising 14% of the samples submitted (Klotz *et al.* 1995). Since then, the importance of different ant pests have changed with addition of new invasive ants and increase in importance of other ants, however, ghost ants are still considered an important pest in many Florida areas.

## Description

Ghost ant workers are extremely small, 1.3 to 1.5 mm long and monomorphic (one-sized). They have 12-segmented antennae with the segments gradually thickening towards the tip. Antennal scapes (the first segment coming out of the head) surpass the occipital border (the back end of the head). Head and thorax are a deep dark brown to black with gaster and legs opaque or milky white (Creighton 1950). The thorax is spineless.

The gaster (swollen part of abdomen) has a slit-like anal opening which is hairless. (Smith and Whitman 1992). The abdominal pedicel (the ant



**Figure 2.** Ghost ant worker.

"waist," stalk-like structure immediately anterior to the gaster) consists of one segment, which is usually hidden from view dorsally by the gaster (Creighton 1950). Stingers are absent.

The small size, combined with the pale color in the posterior part of the ant body, makes ghost ant workers hard to see (Smith and Whitman 1992). At first observation, only the dark portion of the body may be seen, and an untrained observer may misidentify the ant as some other insect.

## Biology and Behavior

The ghost ant is highly adaptable in its nesting habits. It nests readily outdoors or indoors. Colonies may be moderate to large in size containing numerous reproducing females (queens - a condition known as polygyny). Multiple queens may be spread out in multiple subcolonies. Generally, the colonies occupy local sites that are too small or unstable to support entire large colonies. Usually, nesting occurs in disturbed areas, in flowerpots, under objects on the ground, under loose bark, and at the bases of palm fronds. The sites include tufts of dead but temporarily moist grass, plant stems, and cavities beneath detritus in open, rapidly changing habitats (Oster and Wilson 1978). Indoors, the ant colonizes wall void or spaces between cabinetry and baseboards, and other small spaces such as cracks, spaces between books, or wall voids. It will also nest in potted plants (Smith and Whitman 1992). However, indoor foragers often come from outside, and ghost ants are very common pest inside homes (Ferster *et al.* 2002).

Due to nesting behavior, the colonies are broken into subunits that occupy different nest sites and exchange individuals back and forth along odor trails (Oster and Wilson 1978). Hölldobler and Wilson (1990) report that ghost ants are opportunistic nesters

in places that sometimes remain habitable for only a few days or weeks.

New colonies are probably formed by budding. This occurs when one or more reproductive females, accompanied by several workers and possibly some brood (larvae and pupae) leave an established colony for a new nesting site. The nesting habits of the ghost ant are similar to that of the Pharaoh ant, *Monomorium pharaonis* (Linnaeus) (Smith and Whitman 1992). There does not appear to be any infighting between members of different colonies or nests (Smith and Whitman 1992).

Workers have the habit of running rapidly and erratically when disturbed. They are fond of honeydew and tend honeydew-excreting insects. They also feed on both dead and live insects (Smith 1965). When workers are found trailing, their movement is more slow and deliberate. On close inspection some trailing workers can be seen carrying brood (larvae and pupae) (Ferster *et al.* 2002). They will enter structures from nests near foundations or from plants that contact the building (Smith and Whitman 1992).

In Costa Rica, jumping spiders (Araneae: Salticidae) were found living within nests of *T. melanocephalum* located on the undersides of leaves. The basis of this relationship appears to be symbiotic. The spiders provide the ants with protection from predators and parasites, while the ant nest is used as a foundation for web construction (Shepard and Gibson 1972).

## Economic Importance

This species is a household pest. In Florida, it is considered one of the most important ant pests. The ghost ant can not only invade houses from outside, but they can nest in the house as well. Although the ant feeds upon many household foods, it seems to show a preference for sweets, having been observed feeding on sugar, cakes, and syrups (Smith 1965). Outside, the workers scavenge for dead insects and tend sap-sucking insects, collecting honeydew (Ferster *et al.* 2002).

In Florida, the ghost ant has infested quarantine greenhouses where they have proven very hard to

control due to the restrictions imposed on the use of toxicants in these greenhouses. In Gainesville, the ant preyed upon small beetle larvae and lepidopterous larvae from the cultures of insects in quarantine. In more northern areas, ghost ants have become established in heated greenhouses where it can become a problem, especially if it defends honeydew-producing plant pests from introduced biological control organisms.

In coastal Venezuela, the ghost ant was found to be the primary predator of the eggs of *Rhodnius prolixus*, the vector of Chagas' disease. This effective predaceous activity on *R. prolixus* populations by *T. melanocephalum* may account for the absence of *R. prolixus*-associated diseases from this area of Venezuela (Gomez-Nunez 1971).

## Detection

The ant is easily recognized due to its peculiar color markings and small size. Foragers are seen in kitchens and bathrooms on sinks, counters, and floors. When crushed, the workers emit an odor similar to that of rotten coconuts (Smith 1965).

The ghost ant is in the same genus as the odorous house ant, *Tapinoma sessile* (Say). However, the ghost ant is smaller and colored differently since the odorous house ant is entirely dark brown to black.

The Pharaoh ant is also similar to this species but the ghost ant only has one node on its pedicel compared to two on the pedicel of the Pharaoh ant. Other bi-colored, one-node ants either tend to be much larger or the node on the pedicel is visible from above (Smith and Whitman 1992).

## Management

The best approach to avoiding ghost ant 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 (Koehler and Oi 2002).

Generally, control is not necessary except where ghost ants become a nuisance in the home or in greenhouses. If control is necessary, the ant is susceptible to a number of insecticides used in baits or as contact poisons. The latest recommendations are available in the UF/IFAS Insect Management Guide at: Insect Management Guide for Ants (<http://edis.ifas.ufl.edu/IG080>) and Ant Trails: a Key to Management with Baits (<http://edis.ifas.ufl.edu/IG123>).

To control nests, if possible, follow the trails of this species back to the nest and treat the nesting area. Sweet baits can be used on ant trails to control ghost ants, but check within one or two days to see if the ants are feeding. If not, relocate the bait. (Smith and Whitman 1992). Indoor colonies nesting within voids can be controlled with baits. Access of foragers entering from outdoors through cracks and crevices or screens should be restricted with barrier sprays (Ferster *et al.* 2002).

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