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Insec(tc)ure*:
Are you insecure about your insect cures?

A UT Urban IPM Lab Newsletter for the Pest Management Industry

The Winter Ant, *Prenolepis imparis* (Say)

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An email describing a swarm of small flying insects arrived in my inbox on March 14. The several-acre property from which they were found did not have any standing water or any woodlands, and the homeowner was concerned that it might be small flies. Eventually, specimens arrived at my lab, and I had the first look at them. The small black "flies" were actually male ants. As most keys are written for ant workers, identifying males can be challenging. The end of the male ant's abdomen or gaster is morphologically different from the female reproductives or workers, primarily due to the male's genitalia. And, the tip of the worker ant's gaster is used to differentiate the ant subfamilies. The male ants were about 1/8 inch, and I could discern a one-segmented waist, so this eliminated all the ants in the subfamily Myrmicinae, which have a two-segmented waist (pavement ants, acrobat ants, etc.).

A review of ant flight timing in AntWiki (https://www.antwiki.org/wiki/Prenolepis_imparis) revealed that the winter ant, *Prenolepis imparis* (Say), has one of the earliest mating flights in the spring, often swarming between mid-March and mid-April. A comparison of the submitted males with confirmed images of male *P. imparis* (Fig. 1) led to their proper identification. Worker winter ants are 1/8 inch long, with a one-segmented waist and a circular opening at the end of the gaster. They are brown to dark brown, shiny and the alitrunk is severely constricted, somewhat resembling a short barbell (Fig. 2). *Prenolepis imparis* is found throughout much of North America.

Figure 1. Male Prenolepis imparis *(Say), 3.5 – 4 mm. Credit: April Nobile, CASENT0104433, https://antweb.org*

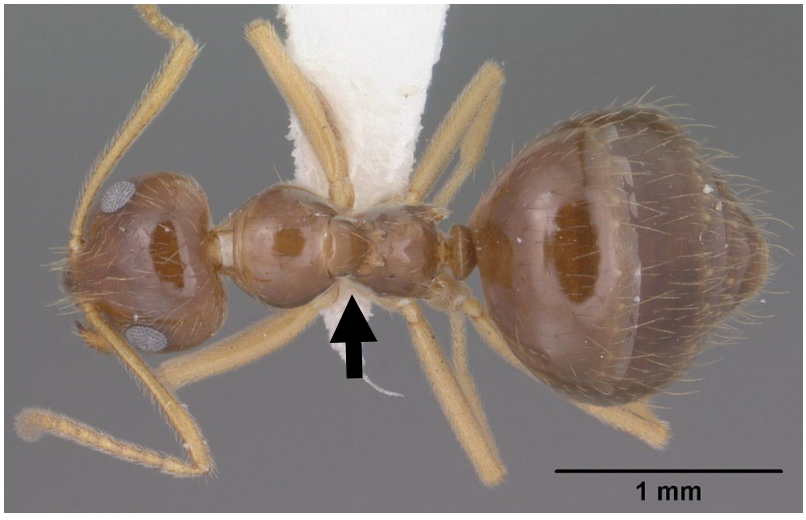

Figure 2. Dorsal view of worker Prenolepis imparis *(Say), 3 – 4mm. Note the severely constricted alitrunk (arrow) and shiny appearance. Credit: Jen Fogarty, CASEENT0102823, https://antweb.org*

The winter ant is quite interesting because it forages at cooler temperatures than other ants and is inactive above ground during the hotter summer months. We assume seeking resources during cooler times gives the winter ant a competitive edge by avoiding other ants. Most worker activity occurs above ground when temperatures are 35 to 55 degrees F, although they can be seen crawling on the soil surface when temps are greater than 60 F and even below 30 F, with the lowest recorded activity at 6 F. Food resources are similar to other ants and include honeydew from sucking insects and nectar, as well as moist, rain-killed earthworms and tissues from young plant parts. Foragers are more commonly seen in shady areas or on cloudy days (Figs. 3 and 4). During the summer months when the nest is sealed, the queens start egg laying and the colony rears the next generation.

The winter ant foraging season in Knoxville is longer than Tschinkel (1987) recorded from northern Florida. Tschinkel reports that the nests close in March/April and are reopened in November. Last year, in a Knoxville forested landscape where we were monitoring Asian needle ants, *Brachyponera chinensis*, we also noted the occurrence of the winter ant. Winter ant activity was winding down in June. On June 13-14, 8.9% of monitoring cards had winter ants and only 0.7% of cards had activity June 27-28. No winter ant activity was noted in July and it wasn't until mid-August or so that we started noting activity again. By the end of the study, October 10 - 11, activity was flourishing with winter ants at 79% of the monitoring cards.

Figure 3. A Knoxville winter ant nest on a cool day after a recent March rain. Credit: K. Vail, UT E&PP

Figure 4. A winter ant worker (inside yellow circle) foraging on a cool, moist day. The worker's color almost matches the color of the clay soil and the overcast sky is reflected in the shiny exoskeleton. Credit: K. Vail, UT E&PP

The reproductives (winged males and females) are produced with the new brood and remain in the nest over the winter, prepared to fly when temperatures warm in the spring. Observed mating flights contained more males than females, which may explain why the sample we received just contained males.

Two other characteristics make *P. imparis* a fascinating species: the presence of repletes, which Tschinkel (1987) referred to as corpulents, and very deep nests that are sealed during the warm/hot months. Repletes are workers that store liquid food in their gaster (Sawh et al. 2023). Earlier researchers assumed that the enlarged worker gasters were

due to their crops filled with sweet liquids. Some even call *P. imparis* the false honey ant for its resemblance to the honeypot ant, *Myrmecosystus* spp. However, Tschinkel (1987) determined that these enlarged gasters of the corpulents were due to accumulated fats. The corpulents assumably use these reserves to feed the developing larvae. This year's callow workers will become corpulents and last year's corpulents will become foragers. There's just one synchronized brood per year with the queens' ovaries active only for a short period in summer.

The winter ant creates very deep vertical nests (8.2 – 11.8 ft) with horizontal chambers coming off the only vertical tube. As the colony grows, more chambers are added, others are enlarged and shapes changed. Foragers are found in chambers closer to the surface, and the corpulents are found deeper, but no chamber is found closer than 2 ft to the surface. Temperatures of the chambers are moderate, between 60 – 75 degrees F. If you're into a hefty discussion with photos of ant nest architecture, you don't want to miss Tschinkel (2015).

While these ants are "cool" and are commonly found around homes in Tennessee landscapes, very rarely are they submitted as indoor pests. A review of ant submissions to my lab for *Prenolepis imparis*, false honey ant, or winter ant revealed nine samples submitted from October to May over the past 29 years.

Hedges (2010) suggests that the mounds of these ants are easily recognized in shady but open sites and can be easily treated with an injection of appropriately labeled insecticide. However, I suggest you keep in mind the depth of the chambers. If nests can't be found, then applying sweet bait near the ants' activity indoors may be helpful. Sealing areas where ants enter the structure may limit the number of foragers indoors. I recall one time in Gainesville, FL where I observed *P. imparis* foraging into a garbage can located a few feet from an outside door. Simply wiping the trail, cleaning the exterior surface of the garbage can and closing it solved the problem.

The next time you receive an inquiry about small black flies swarming in mid-March, don't assume the homeowners can identify flies. As you've heard me say many times, the first step to managing a pest is to properly identify it. So, ask for samples of the specimen. If you can't identify it, contact your local county Extension office (https://utextension.tennessee.edu/office-locations-departments-centers/). If they can't identify it, they can help you submit it to the UT Extension Soil, Plant and Pest Center. If they can't identify it, it will eventually make its way to my office.

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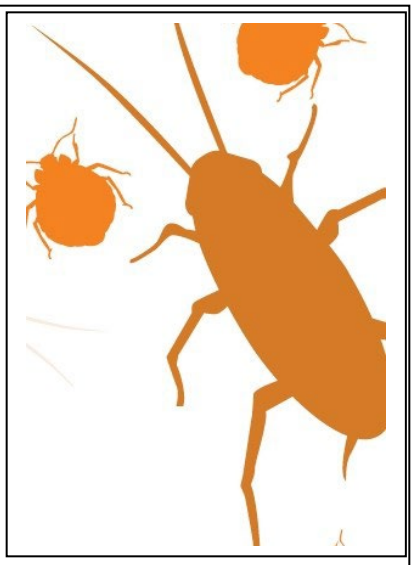

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UNIVERSITY OF TENNESSEE CONFERENCE CENTER | 600 HENLEY STREET | KNOXVILLE, TENNESSEE 37902

Check-in starts at 7:00 AM | Meeting 8:00 – 4:00 EDT

See https://bedbugs.tennessee.edu/resources/events/ for the finalized schedule, CEU assignment and registration information.

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