ODOROUS HOUSE ANTS:

THE MOST COMMON HOUSE-INVADING ANT IN TENNESSEE

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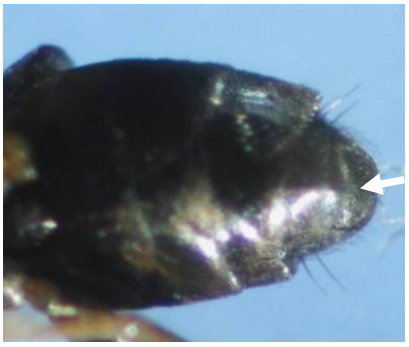
The odorous house ant, *Tapinoma sessile* (Say), or OHA, is considered a pest when it enters structures searching for food, water or nest sites. It cannot sting because it lacks a sting and may only bite if you stick a hand into its nest and vigorously disturb the colony. Winged reproductives occasionally found at lights concern residents, too. OHAs are common throughout the United States and are the second most common pest ant managed by professionals.

DISTRIBUTION

OHA is a small native ant species found in the United States, southern Canada and Mexico. It survives in a variety of environments found from near sea level to elevations of more than 2 miles and can be found in all the continental states. It's possible that OHA is really four similar-looking species, but until more data are produced to support this hypothesis, we'll consider it as one. In 2009, OHA was discovered on the island of Maui, Hawaii, and is now characterized as an invasive species.

IDENTIFICATION

OHAs are about 1/8-inch long, dark brown to black, and smell like rotten coconut with a hint of other odors when crushed. Its waist is one-segmented and lacks an obvious node or bump, which easily distinguishes it from other small dark ants, including the Argentine ant. The gaster or abdomen overhangs the waist making the waist difficult to see. OHA lacks a sting or acidopore (circular ring of hairs) at the end of the gaster, but instead has a slit-like opening on the ventral side of the gaster one segment from the tip. All OHA workers are similar in size and monomorphic.



Above left: *Tapinoma sessile. Photo credit: Joseph Berger, Bugwood.org* ***Above center:*** *A node or bump is lacking on the odorous house ant's waist. Photo credit: UT Department of Entomology and Plant Pathology* ***Above right:*** *As with most Dolichoderine ants, OHA has a slit-like opening on the ventral side of the gaster one segment in from the tip. Photo credit: UT Department of Entomology and Plant Pathology*

BEHAVIOR AND BIOLOGY

In addition to their smell, odorous house ants are named accurately as they are often found foraging along the outside base of a home. Increased indoor activity is often associated with rain. OHA activity can be observed during the day and night. The greatest number of outdoor foragers will be seen when temperatures are between 70 and 86 degrees F. Foraging will continue beyond these temperatures (43-95 degrees F) but forager number will decline at the extremes. In the Mid-South, other ants, such as the little black ant and *Forelius*, will replace OHA at baits at temperatures of 90 degrees F or higher. In much of the USA, foraging during the winter is mostly limited to indoors, although ants may forage outdoors during warm winter days.

OHAs use edges, ridges or other guidelines to move from one place to another. Natural (vines, trees and shrubs) and man-made (siding, ground/foundation wall interface, wires, pipes, conduits, baseboards, counters and others) objects may serve as guidelines. OHAs also may forage in abandoned subterranean termite tubes. Outdoors, OHAs feed on dead and living insects, dead animals (including those deposited by the family cat), pet food, plant nectar and liquid excrement (honeydew) from aphids, scales, and other sucking insects. Indoors, they feed on sweets and other human and pet foods. OHAs are often found foraging to water sources and kitchen and bathroom garbage cans.

OHA eggs and larvae can stick to each other. Note the peg-like caudal protuberance sticking the larvae (bottom left) to the upper inner surface of a petri dish. Photo credit: UT Department of Entomology and Plant Pathology

OHAs do not build nests within mounds of soil; rather, they nest opportunistically. Outdoors, OHA nests in pre-existing spaces that provide protection from the sun and some moisture. They may nest under, near or in logs, landscape timbers, stones, patios, leaves, debris, structural siding (including that laid on the ground), stacked wood or firewood, mulch, pine straw, bee hives, dog houses, or near iris rhizomes. OHA eggs and larvae can stick to each other and on surfaces; they have been found along with workers and other nest members behind the stems of English ivy growing vertically along a building. In dry summers, objects that retain moisture, like porous pieces of wood on the ground, may be more suitable to nesting by OHAs. Indoors, they may be associated with food or moisture and

OHA tending scale insects. Photo credit: Susan Ellis, Bugwood.org

OHA nest between layers of leaves. Photo credit: Jennifer Chandler, UT Department of Entomology and Plant Pathology

A worker OHA (top left) and three queens. Photo credit: UT Department of Entomology and Plant Pathology

can be found beneath edges of carpets and toilets, in cabinets or drawers, near or under garbage cans, and other similar places. Indoor nests are often associated with outdoor nests. For example, OHAs foraging on an outside house wall contained dyed sugar water that had been fed to ants nesting in a kitchen cabinet. Either the same ants foraged indoors and outdoors or the indoor ants shared the liquid food with the outdoor ants in a process called trophallaxis. Often, many nests are present outdoors with a few found inside.

OHAs are polygynous (with many queens per colony) but queen number varies. In natural situations, such as forests, colonies tend be small and monogyne (with one queen). However, in disturbed, urban environments, many queens and tens of thousands or more workers may be present in a colony that has many nests. Workers are more dominant when present in larger numbers (urban environments) than smaller numbers (forests). In the Midwest, OHAs from colonies with many nests will coalesce to a few in the fall and then expand the number of nests through spring and summer. Even though this ant has been considered a pest for about 100 years, mating strategies used by OHAs are not completely understood and may include both mating flights and in-nest mating.

MANAGEMENT

Because indoor OHAs are often in contact with outdoor OHAs, management efforts during the warmer times of the year can often be directed to the outside to impact the indoor ants. Steps to manage OHAs include:

1. Correctly identify the ant. See **Identification** above. OHAs do not readily feed on plant oils. A fire ant bait, which often contains soybean oil, will not be attractive to OHAs and will fail. Confuse Argentine ants as OHAs and an insufficient quantity of bait may be applied. Argentine ants are very similar to OHAs in their appearance, behavior, bait preferences and nest sites; however, worker numbers in Argentine ant colonies exceeds that in OHA colonies.

2. Remove conducive conditions that allow OHAs to thrive. Determine the food, water and harborage that the home and near landscape (within 10 feet) provide to OHAs and then move/remove as many as possible.

Outdoor items to consider for removal:

- Mulch, pine straw, leaves and wood, siding or debris on the ground.
- Ivy growing on/near the structure.
- Stacked firewood.
- Landscape timbers (use formed block or other solid objects instead).

Other outdoor practices to change:

- After pets feed, remove food bowl and place in a sealed Ziploc bag or wipe food bowl to remove any crumbs.
- Manage aphids, scale, mealybugs and other sucking insects on landscape plants close to the structure.
- Trim tree and shrub limbs touching the structure.
- Plant nectar producing plants away from the structure.
- Dispose of carrion left near the structure.
- Move outdoor garbage can away from the structure.
- Regularly clean garbage cans.
- Fix dripping faucets.
- Seal pipe penetrations into the structure and other potential ant entryways.

Indoors:

- Clean spills promptly.
- Wash honey jars after use.
- Store food properly to prevent ant access.
- Remove waste regularly, including before vacations, or seal garbage bags when not in use.
- Seal pipe penetrations and similar ant entry points inside the structure.
- Fix leaks quickly.
- If not using ant bait, wipe foraging trails with soapy water or cleaner to remove the pheromone the ants are following. Repeated wiping of indoor trails may discourage these ants from foraging indoors.

Above left: *Move garbage cans away from structures. Ants were overwintering in the door frame and moved under the garbage can when temperatures warmed in the spring.* ***Above right:*** *OHA feeding on rhododendron nectar. Photo credit both photos: UT Department of Entomology and Plant Pathology*

3. Monitor and inspect to locate nests and areas of activity. To help locate OHA nests and activity, place index cards with a smear of honey every 10-20 feet around the base of the structure. Check the cards in 40 minutes and count the number of OHAs. (If cards are left longer than 40 minutes, the ants may abandon the card when all the honey is consumed or other ant species may locate and defend the food source.) Follow the ants back to their nests and note nest location.

4. Bait areas of activity. Bait outdoors where more than 10 OHAs are found per index card. Workers tend to bring bait back to their specific nest and not all the nests of a colony, so it's important to place the stations where the ants are actively trailing. Liquid baits are most efficiently transferred through ant colonies. Placing gel baits in stations allows the bait to stay moist as condensation occurs in, and rain leaks into, the station. Check bait stations regularly to ensure an adequate amount of bait remains. Gel baits also can be placed in cracks and crevices where the ants are active, but it is difficult to apply enough bait in this manner. Bait also may soak into a porous surface and become unavailable to the ants. Use sweet gel or protein baits for OHAs rather than oil-based ones. Non-repellent, slow-acting sprays can work in conjunction with baits. Avoid using fast-acting sprays, such as pyrethroids, near baits to prevent killing workers before they can transfer the bait back to the colony.

Baiting indoors where ants are active as a sole treatment will most likely provide a short-term reduction in indoor ant foraging. Tens of thousands of workers may be present outdoors, so when an indoor nest is eliminated, it is usually just a matter of time before outdoor ants replace them. Indoor baiting could also encourage indoor foraging. Once baits are placed, do not wipe ant trails or otherwise disturb ants foraging to bait.

5. Treat nests. Because many nests can be found around a structure, it is difficult to locate all of them. Treating nest sites as the sole treatment method would be most effective when just a few small nests are present. Finding nests sites often involves lifting objects to

Above left: *Place honey-smeared index cards every 10-20 feet around the base of the structure. After 40 minutes note the count and record the number of ants.* ***Above right:*** *In addition to recording the number of ants found on the cards, record the location. Place baits at locations where more than 10 ants are found. Photo credit: J. Chandler, UT Department of Entomology and Plant Pathology*

Liquid ant bait is transferred easily throughout the colony. Using large stations, such as the Antopia, helps reduce the number of refills needed. Place stations where more than 10 ants were found per card, and always follow bait and label directions. Photo credit: UT Department of Entomology and Plant Pathology

expose the nest. Inspect and treat nests at the same time to avoid disturbing the ants and causing them to move prior to treatment.

6. Treat perimeter, entryways and areas of activity. A typical perimeter treatment involves spraying the ground/foundation wall interface; the siding/foundation wall interface; and the area around doors, windows and vents. Recent changes to pesticide labels have restricted the areas where perimeter sprays can be applied. Read labels carefully to avoid misapplying the pesticide and possibly causing unintended run-off. Treat areas of ant activity if allowed by label. Both slow-acting and fast-acting perimeter treatments can dramatically reduce the number of outdoor foraging OHAs, but they may slowly affect indoor ant activity if baits have not been used.

Applying fast-acting crack and crevice sprays or dusts to ants indoors will have little effect on outdoor OHA populations and may prolong indoor activity. Avoid applying fast-acting insecticides to interior cracks and crevices as the sole treatment.

7. Combine above. Integrated pest management relies on multiple tactics and managing OHAs is no exception. The best OHA management results will be achieved with a combination of the above practices. Correctly identifying the pest ant and correcting conducive conditions are musts when managing OHA infestations. Monitoring and inspecting to note nest location and activity is especially helpful. Combining different chemical treatments should increase pest management success. For example, combine a slow-acting exterior perimeter treatment (e.g., fipronil) with a bait in an outdoor station where ants are active, or apply a slow-acting spray (e.g., chlorfenapyr) to interior cracks and crevices with an exterior perimeter treatment with a slow-acting spray (e.g., fipronil).

For an example of products registered for OHA in Tennessee, see extension.tennessee.edu/publications/Documents/PB1690.pdf.

For other odorous house ant and pest ant resources see the eXtension website at articles.extension.org/ant_pests.

VIDEO

eXtension webinar: Don't let tramp ants take over your home

youtube.com/watch?v=bokqEIgNbMo&feature=youtu.be

SOURCES

Anonymous. 2014. IPM Action Plan for Tramp Ants. http://articles.extension.org/pages/20993/ipm-action-plan-for-tramp-ants

Buczkowski, G. and G.W. Bennett. 2006. Dispersed central-place foraging in the polydomous odorous house ant, *Tapinoma sessile* as revealed by a protein marker. Ins. Soc. 53:282–290.

Buczkowski, G. and G.W. Bennett. 2008. Seasonal polydomy in a polygynous supercolony of the odorous house ant, *Tapinoma sessile*. Ecol Entomol 33:780–788.

Buczkowski, G. 2010. Extreme life history plasticity and the evolution of invasive characteristics in a native ant. Biol Invasions 1387-3547.

Kimball, C.P. 2016. Colony structure in *Tapinoma sessile* ants of Northcentral Colorado: a research note. Entomological News 125: 357-362

Fisher, B.L. and S.P. Cover.2007. Ants of North America: A Guide to the Genera. University of California Press, Berkeley, CA. 194 pp.

Hedges, S.A. 1998. Field Guide for the Management of Structure-Infesting Ants. 2nd edition. G.I.E. Publishing, Cleveland, Ohio.

Layton, B. and J. MacGown. 2016. Pub 2407 Control of Argentine Ants and Odorous House Ants in the Home. Mississippi State University Extension https://extension.msstate.edu/sites/default/files/publications/publications/p2407_0.pdf

Menke, S.B., W. Booth, R.R. Dunn, C. Schal, E.L. Vargo and J. Silverman. 2010. Is it easy to be urban? Convergent success in urban habitats among lineages of a widespread native ant. Plos ONE 5(2)e9194 http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0009194

Mueller, A. and H. Buyung. 2014. Northern Plains Integrated Pest Management Guide: *Tapinoma sessile*. https://wiki.bugwood.org/NPIPM:Tapinoma_sessile

Sorger, M. Urban Ant Identification Key – Southeastern USA. https://theantlife.com/teaching#jp-carousel-7151

Toennison, T.A., N.J. Sanders, W.E. Klingeman, and K.M. Vail. 2011. Influences on the structure of suburban ant (Hymenoptera: Formicidae) communities and the abundance of *Tapinoma sessile.* Environmental Entomology, 40(6): 1397-1404

Vail, K.M. and P. Barnwell. 2014. PB1629 Managing Structure-Invading Ants. UT Extension https://extension.tennessee.edu/publications/Documents/PB1629.pdf

Vail, K.M., D. Bailey and M. McGinnis. 2003. (University Research Report) Perimeter Spray and Bait Combo. Pest Control Technology July: 96-100.

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