

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

A UT Urban IPM Lab Newsletter for the Pest Management Industry

The Asian Needle Ant

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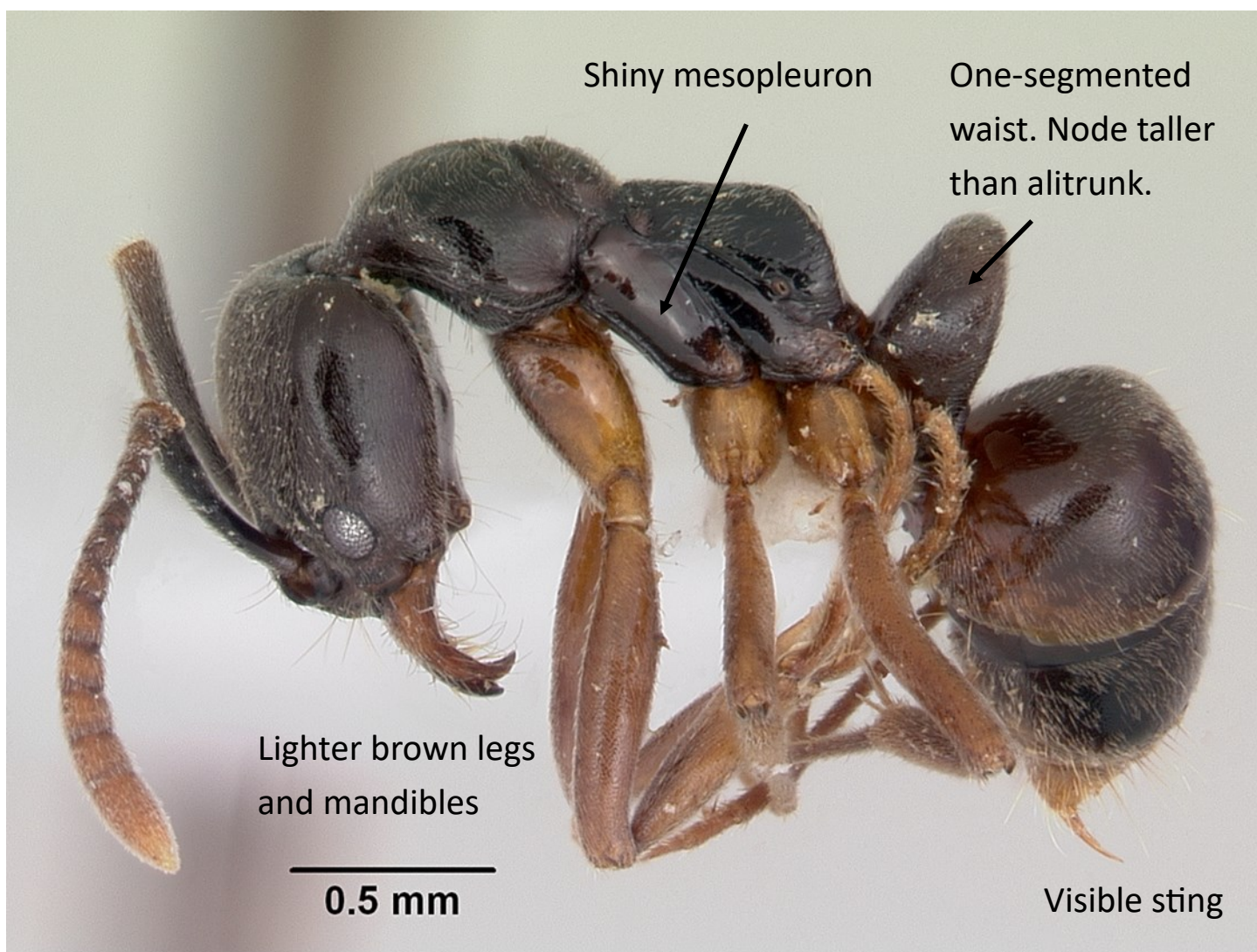


Figure 1. The Asian needle ant, *Brachyponera chinensis* (Emery). Credit: April Nobile, CASENT0104738, <https://www.antweb.org/bigPicture.do?name=casent0104738&shot=p&number=1>. Modified by K. Vail.

The exotic, invasive Asian needle ant, *Brachyponera chinensis* (Emery), is one of the few ants in the subfamily Ponerinae considered a pest. This ant was first submitted to the UT Urban IPM lab in August 2004 and has been spreading throughout the state ever since. Many Tennesseans probably assume any stinging ant in the state is a fire ant, but that's not so. Because of *Brachyponera chinensis*' painful, irritating and long-lasting sting reactions, it's time for you to become more familiar with this pest ant.

Brachyponera chinensis workers are dark brown with lighter brown or orangy-brown mandibles and legs. They are 4.5 - 5.0 mm long, which is larger than *Tapinoma sessile*, the odorous house ant (2.4 - 3.3 mm). A large stout singular petiolar node taller than the alitrunk, a shiny mesopleuron and a visible sting distinguish this ant from other pest ants (Fig. 1). The female alate or winged reproductive has similar coloration but is slightly larger, about 5—6 mm or nearly 1/4 inch. The lighter color of the male distinguishes it from the females, as does its smaller size (3.0 mm) (Fig. 2). Imported fire ants, *Solenopsis richteri* and its hybrid, are also dark, stinging ants but have a two-segmented waist and a two-segmented antennal club (Fig. 3).



Fig. 2. *Brachyponera chinensis* female alate (top), male alate (middle) and worker (bottom). Photo credit: E. Paysen.



Fig. 3. Hybrid imported fire ant workers are polymorphic and range in length from 1 to 6 mm, have a two-segmented waist and a two-segmented antennal club. Photo credit: E. Bernard.

Behavioral differences help differentiate the dark imported fire ants from the Asian needle ant. Fire ant nests are often found in open areas in lawns and pastures, while the Asian needle ant nests are often found in forested areas or shaded moist urban sites. *Brachyponera chinensis* nest sites are very similar to the odorous house ants' which are often found under objects in contact with the soil. These opportunistic nests include areas under rocks, pavers, bricks, logs, railroad ties, stumps, pine needles, straw, leaves, mulch and other objects. Neither the Asian needle ant or the odorous house ant builds a mound, whereas fire ants do. Imported fire ants (IFA) and odorous house ants (OHA) mass recruit to food sources. Long lines of IFA or OHA workers often follow guidelines and pheromone trails to food sources. But Asian needle ants don't mass recruit. If an Asian needle ant encounters a significant food source, a sister ant will be carried to the food source, a process called tandem carrying. When this is first noticed, the observer may think they are witnessing a two-headed ant, but further observation reveals the truth. Images of tandem carrying are found at https://www.antwiki.org/wiki/File:Brachyponera_chinensis_tandem.jpg. Another difference between *B. chinensis* and other pest ants is its preference for termites. Although the Asian needle ant consumes other insects, fish parts and rotten fruits, it prefers to feed on termites and is not known to consume honeydew, the excretory products of soft-bodied insects. The stinging response also differs between fire ants and Asian needle ants. Fire ants sting in large numbers to protect their nest when disturbed, but Asian needle ants don't do this. *Brachyponera chinensis* is more likely to sting to defend itself when being crushed against your skin and clothing. One thing *B. chinensis* and fire ants have in common is facultative polygyny and polydomy. Sometimes they have one queen (monogyny) in one nest (monodomy), and other times, they have multiple queens (polygyny) in multiple nests (polydomy). While *B. chinensis*



may have thousands of ants in a colony, imported fire ant colonies may have hundreds of thousands of ants.

Allergic responses to the Asian needle ant's sting are common. Not only do workers sting, but the winged females can too, especially when they land on individuals and get trapped between the skin and clothing. At a South Carolina zoo, most sting victims (80%) experienced moderate symptoms, including intermittent pain, swelling at the sting site (< 5 cm), redness and hives, with symptoms persisting from 2 hours to 5 days. A smaller percentage (8%) of victims experienced more severe local symptoms with swelling of more than 5 cm (Fig. 4), extreme hives, redness and recurring pain lasting 3 days to 2 weeks. Minor symptoms were experienced by 12% of these sting victims, and these lasted less than an hour. In Asia, *B. chinensis* venomous stings are responsible for many cases of anaphylaxis, a life-threatening condition that causes difficulty in breathing, hives, low-blood pressure and other symptoms that can lead to death if the allergic response is not treated. Anaphylaxis caused by this ant occurs in the US too.

Figure 4. A severe response (red, raised area more than 3 inches in length) to an Asian needle ant sting in Oak Ridge, Tennessee.

Originally from Japan and other areas of Asia, the Asian needle ant was first discovered in the US in 1932 in Decatur, Georgia. A few years later it was also found in eastern North Carolina and Virginia.

Unpublished reports placed it in Alabama, Florida and Tennessee around the 1950s. Little was heard about this ant

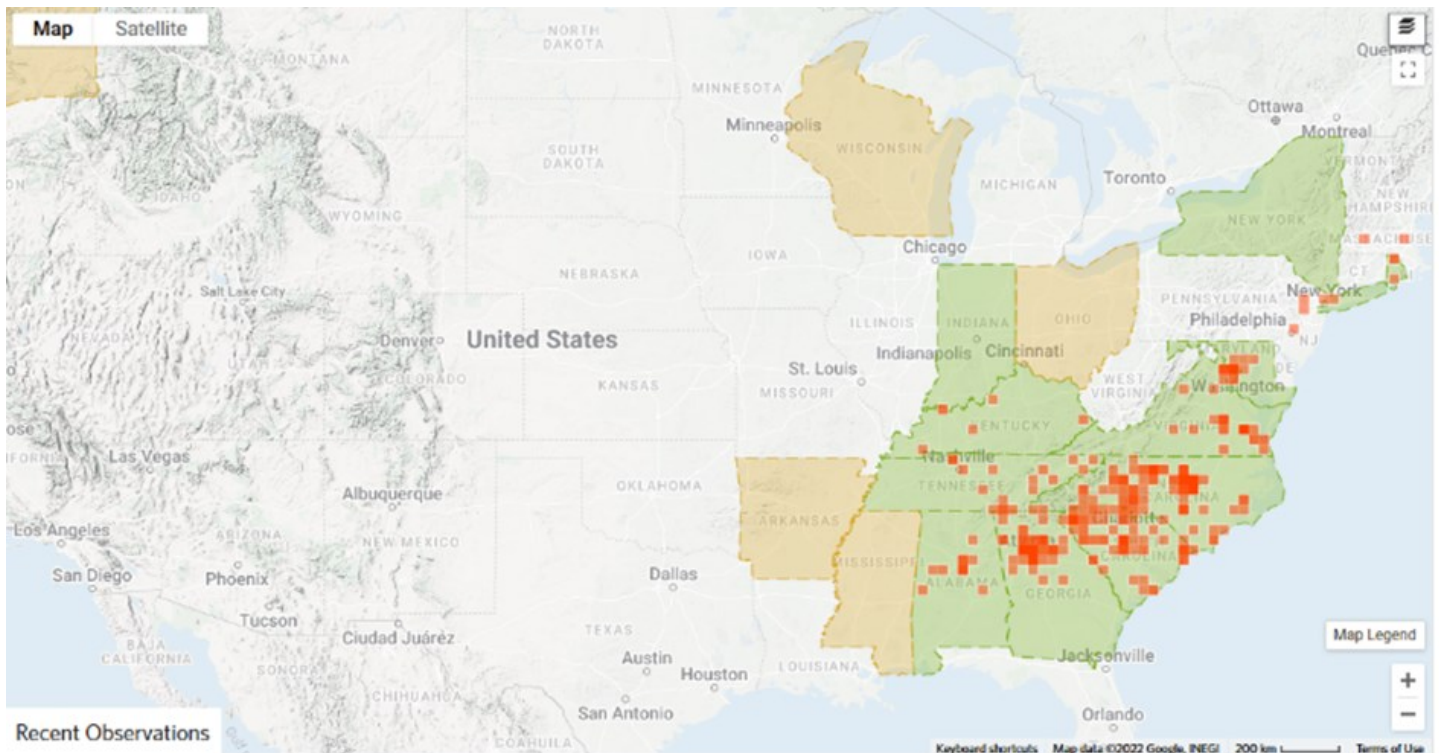


Figure 5. Distribution of the Asian needle ant, *Brachyponera chinensis*, on Inaturalist. Accessed 6 May 2022. <https://inaturalist.ca/taxa/367034-Brachyponera-chinensis>

until stinging events in North Carolina and South Carolina in the early 2000s. The current distribution of this ant includes much of the southeast, with its greatest abundance in Northern Georgia, South Carolina and North Carolina. And it is expanding into the mid-south, mid-west, mid-Atlantic, and the northeast (Fig. 5). Where it occurs, it is displacing native ant species and even pestiferous exotic ones, including the Argentine Ant, *Linepthima humile*.

I won't forget the day in which one of my recent students returned from the field and exclaimed that the Asian needle ant was everywhere in East Tennessee and was especially abundant in the Chattanooga area. Where ever he saw Asian needle ants in abundance, few other ants were seen. He was distraught at this displacement of other ant species. *Brachyponera chinensis* is a serious pest. Not only is it a medical concern, but it is changing ecosystems by displacing ant species and all of the ecosystem services they provide. I've asked my student to update the records with his finds and maybe this article will motivate him to do so. I'd also hope it would encourage you to do the same. Won't you please visit iNaturalist at <https://www.inaturalist.org/> and become a citizen scientist where you can enter the locations where you find *B. chinensis* and any other species you've accurately identified or photographed? I believe *B. chinensis* is more widespread in Tennessee than indicated in Figure 5. I've had communications from West Tennessee but no images or specimens to confirm its presence.

Now that you are aware of this ant and the damage it causes, we should discuss management options. While most Asian needle ant encounters occur in the landscape, reports of it foraging indoors have reached me. In one location, the indoor foraging activity halted after a Termidor treatment for subterranean termites. Another *B. chinensis* infestation was brought to our attention when a pest management professional found this ant in his termite bait stations. He brought the specimens to us because he thought they were fire ants. He had heard that the fire ants in our area were darker (hybrid imported fire ants were the predominant form in East Tennessee, and this is now true for middle Tennessee). So beware of these ants when checking termite bait stations. Since stings occur when the ant is crushed/pushed against fabric and skin, it makes sense to wear thick gloves when working the landscape. And remember, the winged females can sting when they land on you. Flights typically occur from May to July.

More research is needed to create best management practices for the Asian needle ant. We were unsuccessful using Advion gel bait in combination with an Advion spray at an upper East Tennessee school probably because the mulch was more than 6 inches thick. School personnel later reduced the thickness of the mulch but we haven't received any updates on the ant's presence. A North Carolina State University Extension publication suggests, "because this species is predatory and scavenges on invertebrate carrion, it has been noted that they will recruit to protein-based insecticide baits. Professional products such as Extinguish Plus®, Advion® Fire Ant Bait, Optigard® and Maxforce FG® are suitable baits for this pest. For homeowners, some of the fire ant baits such as "Amdro", should work. It is important to think in terms of *management* rather than eradication."

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GET Educated.

8TH ANNUAL TENNESSEE

BED BUG, COCKROACH & RODENT MANAGEMENT MEETING

WEDNESDAY | AUGUST 3, 2022

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

Check-in starts at 8:15 AM | Meeting 9:00 – 4:00 EDT

TOPICS

- > 9:00 – 10:00 **The Effects of Bed Bugs, Cockroaches, and Rodents on Human Mental and Physical Health**
Dr. Jerome Goddard, Mississippi State University
- 10:00 – 10:30 Break with Vendors
- > 10:30 – 11:30 **Bed Bug Prevention for Health-Field Personnel and Social Workers**
Dr. Karen Vail, University of Tennessee
- 11:30 -12:30 Lunch
- > 12:30 -1:30 **Monitoring for Bed Bugs, Cockroaches and Rodents in Low-income Housing**
Dr. Changlu Wang, Rutgers University
- > 1:30 – 2:30 **Essential Oils: Do They Have a Place in Low-income Housing Pest Management**
Dr. Ameya Gondhalekar, Purdue University
- 2:30 – 3:00 Break with Vendors
- > 3:00 – 4:00 **Solving Bed Bug and Cockroach Problems in Multi-Unit Structures and Q & A**
All speakers

WHO SHOULD ATTEND?

- > Pest management professionals (PMPs) (5 TN CEUs for categories 7, 8, 10, and 12).
- > Housing, hospitality, social worker, and health-field personnel, and
- > ANYONE interested in bed bug, cockroach and rodent management is welcome!

Registration fees

PMPs \$100

Others \$50

Online registration only.
Registration will close July 27
<https://tiny.utk.edu/BBmtg2022>

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To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide.

According to laws regulating pesticides, they must be used only as directed by the label and registered for use in your state.

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This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

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