

Insec(tc)ure*:

Are you insecure about your insect cures?

A UT Urban IPM Lab Newsletter for the Pest Management Industry

Tetramorium tsushimae, the Japanese Pavement Ant

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Every entomologist suffers from an insect-collecting addiction at some time in their career, and it usually starts with an insect taxonomy class. The thrill of identifying an insect for the first time can be exhilarating. Before you know it, you can't find any food in the freezer because it's full of odd-shaped containers, medicine vials, plastic bags and envelopes. All contain insects waiting to be pinned and/or spread, identified, labeled and inserted into the Schmitt box, Cornell drawer or other insect display box. As I've progressed in my career, I spend more time in front of the computer than collecting insects, but the thrill of identifying an insect I've never seen before hasn't faded. We've had a few first IDs for me this year, including *Muscina pascuorum*, mentioned in last month's [Insec\(tc\)ure](#) newsletter. In this article, I'll describe another.



Figure 1 Ants climbing brick.



Figure 2. *Tetramorium tsushimae* stuck to kitchen glue board.

This past summer, the UT Urban IPM Team was conducting an indoor/outdoor inspection of a Warren County, Tennessee school. We kept encountering an ant resembling a pavement ant, *Tetramorium immigrans* Santschi. You may have learned the scientific name of the pavement ant as *Tetramorium caespitum*, but the species name was changed to *immigrans* in 2017. The Warren County ant was slightly smaller, at least, I thought it was with the unaided eye, and something seemed different from pavement ants. The ants were monomorphic like pavement ants. Ant size can vary somewhat, so maybe this was a population of small pavement ants? The ants were numerous and commonly encountered outdoors on the grounds and less frequently on the brick (Figure 1). We were amazed to find many of these ants stuck to a glue board in the kitchen (Figure 2). I tentatively identified the ant as *Tetramorium tsushimae* and Jennifer Chandler recently confirmed the identification molecularly using the CO1 mitochondrial subgene.

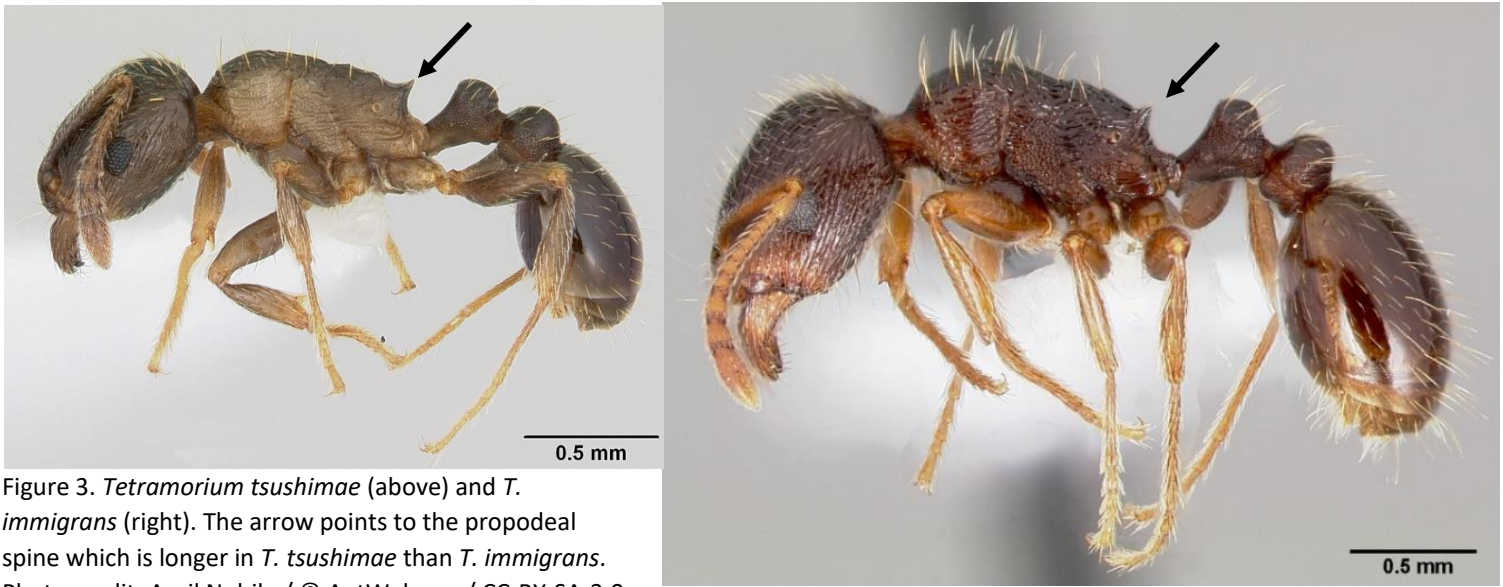


Figure 3. *Tetramorium tsushimae* (above) and *T. immigrans* (right). The arrow points to the propodeal spine which is longer in *T. tsushimae* than *T. immigrans*. Photo credit: April Nobile / © AntWeb.org / CC-BY-SA-3.0

These two *Tetramorium* species are closely related and are in the same species complex. They are nearly identical in appearance, but the body length of *T. tsushimae*, the Japanese pavement ant, is slightly smaller (2.5 – 2.8 mm compared to 2.9 – 3.2 mm of *T. immigrans*) and its propodeal spine is somewhat longer than that of *T. immigrans* (Figure 3). *Tetramorium tsushimae* will eventually displace *T. immigrans* if they occur in the same area. Further comparisons of these species can be found in Table 1.

Table 1. Comparison of *T. immigrans* and *T. tsushimae* characteristics.

Species' scientific name and common name	Native Range	Year introduced into US and US distribution	Single (monogyne) or multiple (polygyne) queen nests in the introduced range	Single or multiple nests per colony in the introduced range	Dispersal in the introduced range	Habitat
<i>Tetramorium immigrans</i> , the pavement ant	Western Palearctic Fig. 4	First recorded in US in the 1800s, in Tennessee in 1895 (Brown 1957), and now throughout large parts of North America. Fig. 4	Single-queen	Single	Probably through mating flights	Mostly urban areas, but also in natural ecosystems (grasslands)
<i>Tetramorium tsushimae</i> , the Japanese pavement ant	Eastern Asia Fig. 5	Missouri, Illinois, Tennessee, New York, possibly Kentucky, Michigan. Fig. 5.	Polygyne (up to several hundred queens)	Single supercolony (polydomous in native range)	Budding	Urban areas, suburban areas between widely spaced hardwood trees, grasslands

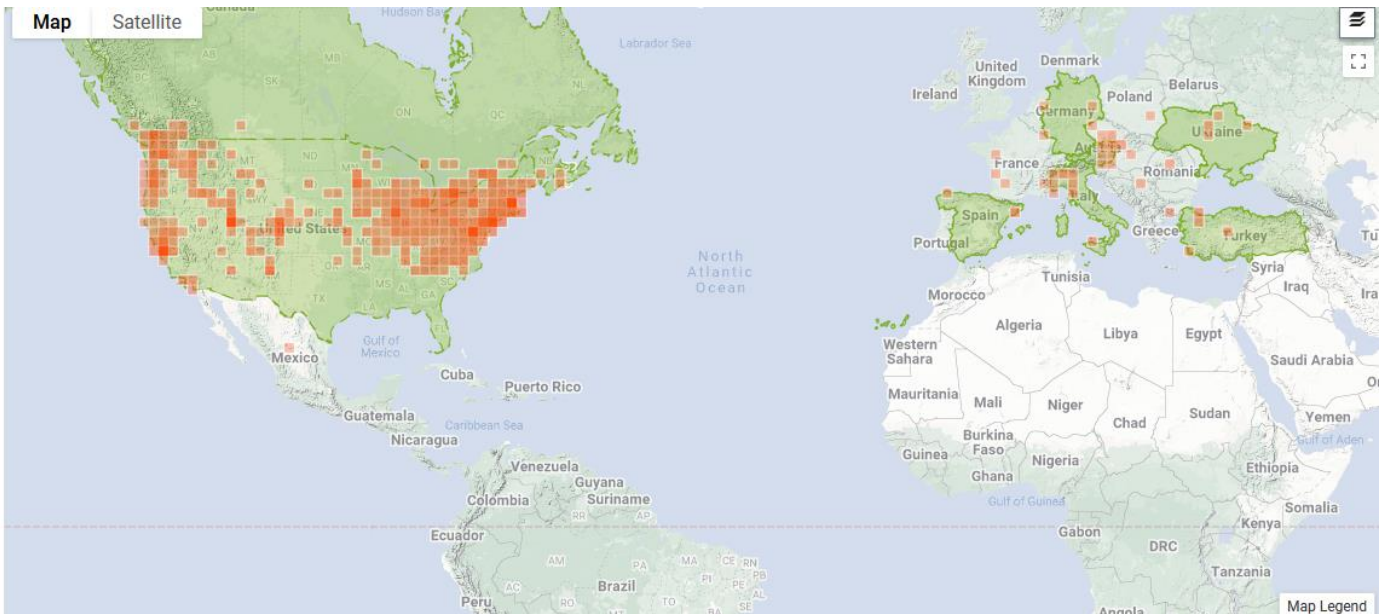


Figure 4. Distribution of *Tetramorium immigrans*, the pavement ant, on iNaturalist.org.



Figure 5. Distribution of *Tetramorium tsushimae*, the Japanese pavement ant, on iNaturalist.org.

I thought we had a new state record for *T. tsushimae*. I recalled James Trager’s 1988 discovery of this ant in Missouri as the first US record, and it was reported to be in Illinois by 2006. A glance at the [Ants \(Formicidae\) of the Southeastern US website](#) revealed this ant was not found in the southern US yet; however, both [antwiki.org](#) and [antweb.org](#) have 2011 records for this ant in Nashville. Since this ant doesn’t disperse through mating flights, its distribution is probably aided by the movement of sod, nursery stock, gravel or soil.

Our role in the school IPM demonstrations is to conduct an inspection, report the conducive conditions and pests present and suggest management strategies. In this case, we inspected the school with the facilities director and a representative from the pest management company. I’m waiting to hear if the ants have been eliminated from the school’s interior. *Tetramorium tsushimae* feeds on similar items as *T. immigrans*, including a preference for protein in the spring and summer with an increase in carbohydrate uptake in the fall. I suspect management techniques used for pavement ants, such as granular baits, bait stations, or other baits used where the ants were foraging combined with a slow-acting perimeter treatment, would be successful. Finding and treating the nest associated

with the interior activity would also be helpful. Any interior moisture source allowing the ants to thrive could be eliminated. Or, if foragers were entering through an expansion joint or other entry point into the structure, this area could be further sealed and/or treated.

Well, once again, an invasive pest species has provided me fodder for my newsletter article.

I hope to see everyone at the [Smoky Mountain Pest Management Conference](#) on January 18 at the UT Conference Center in Knoxville and the [TPCA Winter Conference](#) on February 27 and 28 in Nashville. Til next time.

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