

Insec(tc)ure*:

Are you insecure about your insect cures?

A UT Urban IPM Lab Newsletter for the Pest Management Industry

The Brown Widow, *Latrodectus geometricus* Koch

Karen M. Vail, UT Entomology & Plant Pathology

Most Tennessee pest management professionals are familiar with the southern black widow, *Latrodectus mactans* (Fab.) (Figure 1) and possibly the northern black widow, *L. variolus* Walckenaer (Figure 2), but less know the brown widow spider. The brown widow spider, *Latrodectus geometricus* Koch, is a more colorful pantropical widow spider suspected of originating in Africa that was introduced into Florida sometime around 1935 and has slowly spread northward into the Gulf Coast and southern Atlantic coastal states of the US. It's also established in California and elsewhere. The purpose of this newsletter is to create awareness of this less common widow spider that could be introduced to our state and to encourage pest management professionals to provide me evidence of the spider's establishment in Tennessee.



Figure 1. *Latrodectus mactans*, the southern black widow. Credit: James Solomon, USDA Forest Service, Bugwood.org



Figure 2. *Latrodectus variolus*, the northern black widow. Credit, Jim Jasinski, Ohio State University Extension, Bugwood.org

I owe the subject of this newsletter to the keen eye of my nine-year-old grand nephew. While vacationing at a South Carolina beach home, he found what he described as about ½ inch eggs and wanted me to identify them assuming they were produced by an insect and I would know their identity. When I heard the size, I suggested some of our other family members with degrees in wildlife biology may be more helpful. But he persisted, so we investigated. He brought me to a deflated pool tube under a wooden deck (Figure 3) and once I saw the egg sacs, it was easy to determine these were produced by the brown widow spider. **As far as I know, it is the only spider that produces an egg sac with spikes.** Fortunately, the pool tube was deflated, and the adult female that had produced the egg sacs was not present, or this could have been disastrous. Imagine yourself crawling into a pool tube and the female biting in self-defense as it's crushed against bare skin. Although spider bites are rare, most occur in such situations, when the spider is crushed against skin and bites in self-defense to prevent it from being crushed. Further investigation of the premises led us to find these egg sacs under wooden outdoor stairs (Figure 4), in the upper corners of the outdoor shower and on a screened-in patio.



Figure 3. Brown widow spiky egg sacs. Credit: K. Vail, UT E&PP.



Figure 4. Brown widow egg sacs under stairs. Credit: K. Vail, UT E&PP.

While it might not be obvious in Figure 5A, the adult female is resting at the bottom of the web retreat. If we peer inside the retreat, she is visible (Figure 5B). And if a 9-year-old blows on the retreat five times and then runs to tell you the female has left the retreat, she is more visible. He later informed me that blowing once did not make her move. Caution: I do not recommend young children using this technique. Egg sacs are initially white but yellow as they age and may appear gray when the spiderlings are present. Spiderlings hatch in 14-21 days but stay within the sac for several days to a month. Egg sacs are laid in clusters at night. Initially, the spiderlings lack color, but before they leave the egg sac, they are patterned and with a white hourglass. Spiderlings eventually disperse via silk release and ballooning.

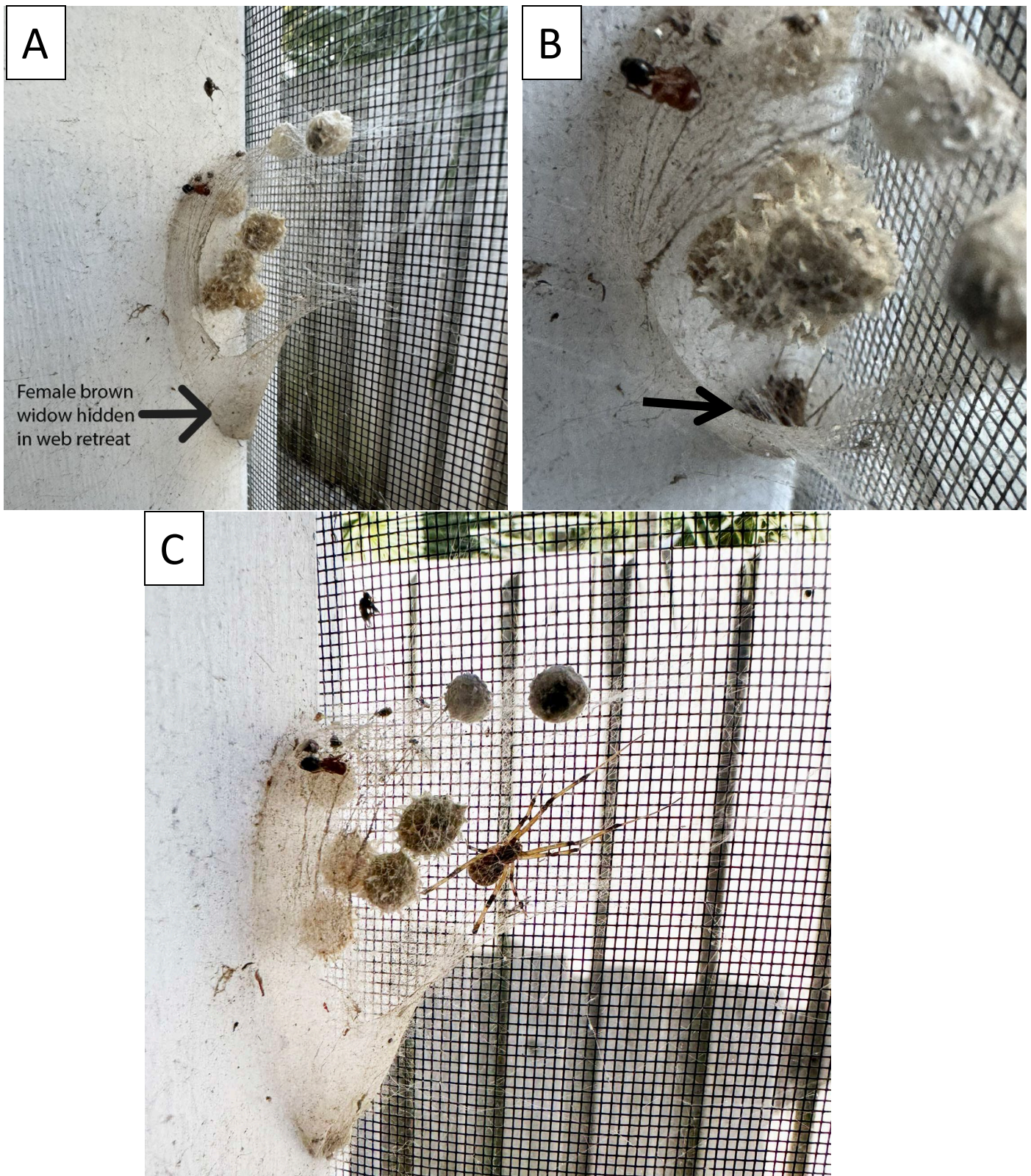


Figure 5. Female brown widow hidden in web retreat (A), visible in web retreat (B) and outside of web retreat due to air blown at the retreat. Credit: K. Vail, UT E&PP.

Widow spiders in the family Theridiidae, are also called comb-footed spiders because of the “comb” on the tarsi of the fourth leg (Figure 6) used to wrap silk around prey. While they have this feature in common, we can easily distinguish the widow spiders encountered in Tennessee. Typically, the adult female southern black widow has an intact bright red hourglass shape on the ventral or underside of the abdomen (Figure 1), while the hourglass is interrupted in the northern black widow (Figure 2). Red spots may be visible on the northern widow's dorsal or upper abdominal surface.

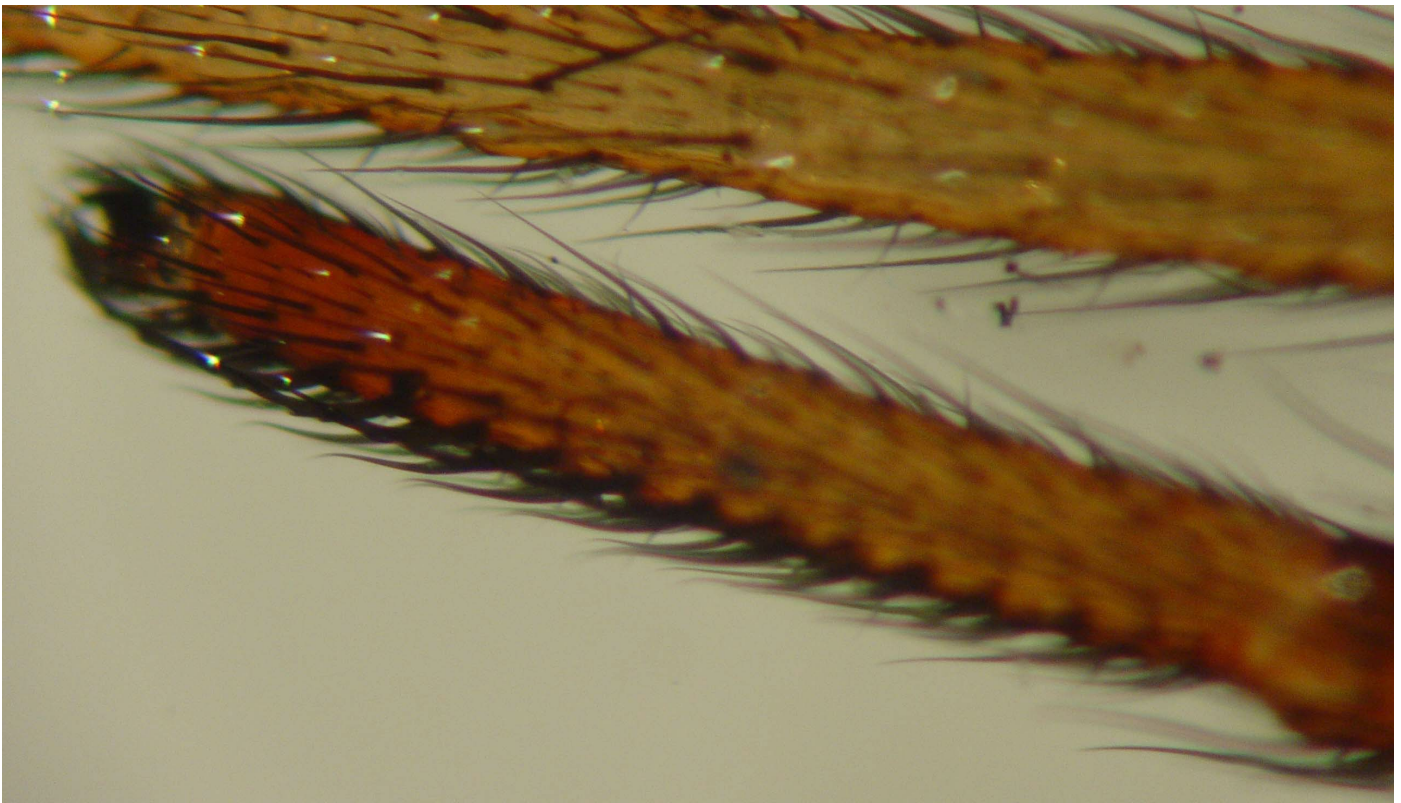


Figure 6. The comb of the widow or comb-footed spiders in the family Theridiidae consists of rows of robust, curved bristles on the 4th leg that is used to wrap silk around prey. Credit: UT E&PP



Figure 7. The adult female brown widow has banded legs and outlined geometric shapes on the dorsal abdominal surface. Credit: Sturgis McKeever, Georgia Southern University, Bugwood.org

The hourglass is intact in the brown widow, but it tends to be reddish-orange. Whereas our black widow species are glossy black, brown widow color varies greatly (nearly white, gray, light brown, dark brown, almost black) and depends on the substrate's color. See Hall 2016 for examples of brown widow color according to substrate color. A darkly outlined central and three lateral bands/geometric shapes are seen on light-colored brown widows. Another distinctive feature of the brown widow is the light and dark bands on the legs (Figure 7). Even in the darker-colored brown widows, it's usually possible to see lighter bands on the legs. Distinguishing the brown widow from the western black widow is much more difficult and since we are very unlikely to see a western black widow, we'll save that discussion for another day (Vetter 2024). Like many spiders, the brown widow female's body is larger than the male. Female brown widow bodies are 7-10 mm, while the males are just 2 – 4 mm.

Where established, the brown widow is very common around structures and, in some locations, is displacing the native widow species. This spider's abundance around structures requires us to discuss the topic of bite toxicity and its risks to humans. As with most spiders, brown widows are not aggressive. They will climb into the retreat if the web is disturbed. While we noted the female emerged from the web retreat when disturbed by breaths of air, others have reported another reaction when the retreat was disturbed. Brown widows often fall to the ground, pull in their legs and play possum (act as if they're dead). It's suggested that this behavior reduces their chances of biting humans. Although the adult brown widow females can bite humans, their bites are often not as severe as a black widow's, pain may remain localized to the bite area and about 15% of the bites lack venom. However, in some cases, typical black widow bite symptoms were experienced (muscle, abdominal and lymph node pain, raised temperature and leg weakness and difficulty walking), so it's best to avoid contact with these spiders.

As I mentioned earlier, I'm interested in this spider's distribution in Tennessee. We've received specimens from Tennessee locations in the past, but I don't have any data indicating this species survived the winter or is established in Tennessee. Barnes et al. (2023) found the lower temperature in which locomotion was lost (CT_{Min}) (1.4 C or 34.5 F) was best at predicting the brown widow's current distribution in the US. But "heat islands" due to human activity may allow expansion beyond their current distribution and climate change may also have an impact.

If you have evidence that brown widows have survived the winter or have two consecutive years of brown widows found on the same property, please email this information along with photos to me at kvail@utk.edu.

References

Barnes, C. L., N. W. Blay and S. M. Wilder. 2023. Thermal tolerances of different life stages, sexes, and species of widow spiders (Araneae: Theridiidae). *J. Arachnology* 51(1): 46-56. <https://doi.org/10.1636/JoA-S-21-044>

Hall, D. 2016. EENY-650 Featured Creatures: The Brown Widow. https://entnemdept.ufl.edu/creatures/URBAN/SPIDERS/brown_widow_spider.htm accessed June 13, 2024.

Vetter. R. 2024. How to Identify Brown Widow Spiders. <https://civr.ucr.edu/invasive-species/how-identify-brown-widow-spiders> accessed June 20, 2024.

Upcoming Educational Events Offered by the UT Urban IPM Program

Come experience the best tasting food you'll find at any conference in the area – it's prepared by the UT Culinary Program's students.

GET
Educated.

10TH ANNUAL TENNESSEE

BED BUG, COCKROACH & RODENT MANAGEMENT

MEETING WEDNESDAY | AUGUST 7, 2024

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

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

- > 8:00 – 9:00 **Exploring Bed Bug Biology and Recent Innovations in Management Strategies**
Simona Principato, University of Kentucky
- > 9:00 – 10:00 **What Do You Mean We Have Smokybrown and Turkestan Cockroaches in Tennessee?**
Dr. Art Appel, Auburn University
- 10:00 – 10:30 Break with Vendors
- > 10:30 – 11:30 **Mosquitoes: Insect Vector and Vector-Borne Diseases**
Dr. Angela Tucker, University of Tennessee
- 11:30 – 12:30 Lunch
- > 12:30 – 1:30 **Norways, Roof Rats and House Mice, Oh My!**
Tim Madere, New Orleans Mosquito, Termite & Rodent Control Board
- > 1:30 – 2:30 **Working with Suspected Delusional Infestations**
Dr. Karen Vail, University of Tennessee
- 2:30 – 3:00 Break with Vendors

Drum roll please.... Announcing the exciting lineup of the 10th Annual Bed Bug, Cockroach and Rodent Management Meeting to be held in Knoxville on August 7th at the UT Conference Center. Thanks to your responses on program evaluations, we've expanded beyond the previous subjects presented. This year, Simona Principato, of the University of Kentucky's DeVries Lab, will present innovations in bed bug management. When the folks in Chattanooga grabbed me after a meeting to complain about the increase in smokybrown cockroaches in the area, I sought Dr. Art Appel of Auburn University, one of the few researchers in the country that have addressed this pest, to honor us at this meeting. Our last out-of-state speaker, Tim Madere, comes to us from NOMTRCB, the New Orleans Mosquito, Termite & Rodent Control Board. Tim will share his practical, hands-on experience managing rodents in a large southern city. Dr. Angela Tucker is new to UT and will deploy her years of industry training experience to update us on mosquitoes and the diseases they vector in East Tennessee. And, I'll round things out by discussing delusional infestation (DI), a condition in which individuals falsely believe they are infested with insects, mites and other parasites, and the latest materials we have developed to work with these suspected DI individuals. Stick around for the problem-solving session at the end of the conference when manufacturer reps, distributors, pest management professionals, social workers, housing personnel and presenters work together to solve scenarios about these pests.

For more information, see <https://tiny.utk.edu/2024BBEvent>.

ACE (Associate Certified Entomologist) Prep Course

Fall 2024

Are you certified in pesticide applicator category 7 with a minimum of 5 years of verifiable pest management experience in the United States? Then you may be ready to become an ACE, an associate certified entomologist. Before you can become an ACE, you will need to provide two letters of professional reference, be willing to adhere to the [ACE Code of Ethics](#), [complete the application](#) and [pay the application fee to the Entomological Society of America](#) and pass an online test of your knowledge of structural pest control. The program and its benefits are explained in its entirety at <https://entocert.org/ace>. The application process is separate from the training offered below.

To help you prepare for the exam, Dr. Karen Vail, Extension Urban Entomologist of the UT Department of Entomology & Plant Pathology will provide an ACE Prep Course this fall. All training sessions will be virtual and held from 5 pm to at least 6 pm on select Mondays via Zoom. A new Zoom link will be sent each week. By offering online training, we no longer limit participants to be within a few hours' drive of campus!

2024 Training Date	Subject
September 16	Integrated Pest Management and Tools
September 23	Insecticides and Modes of Actions
September 30	Pesticide Safety, Laws & Labels
October 7	Insect Biology and Morphology
October 14	Ants
October 21	Cockroaches
October 28	Flies
November 4	Stinging and Biting Arthropods
November 18	Stored Products Pests
November 25	Occasional Invaders
December 2	Wood-destroying Organisms
December 9	Common Commensal Pests/Review
December 15	Extended review in the afternoon
December 16* 5 pm – 8 pm	Exam (limited to 15)*

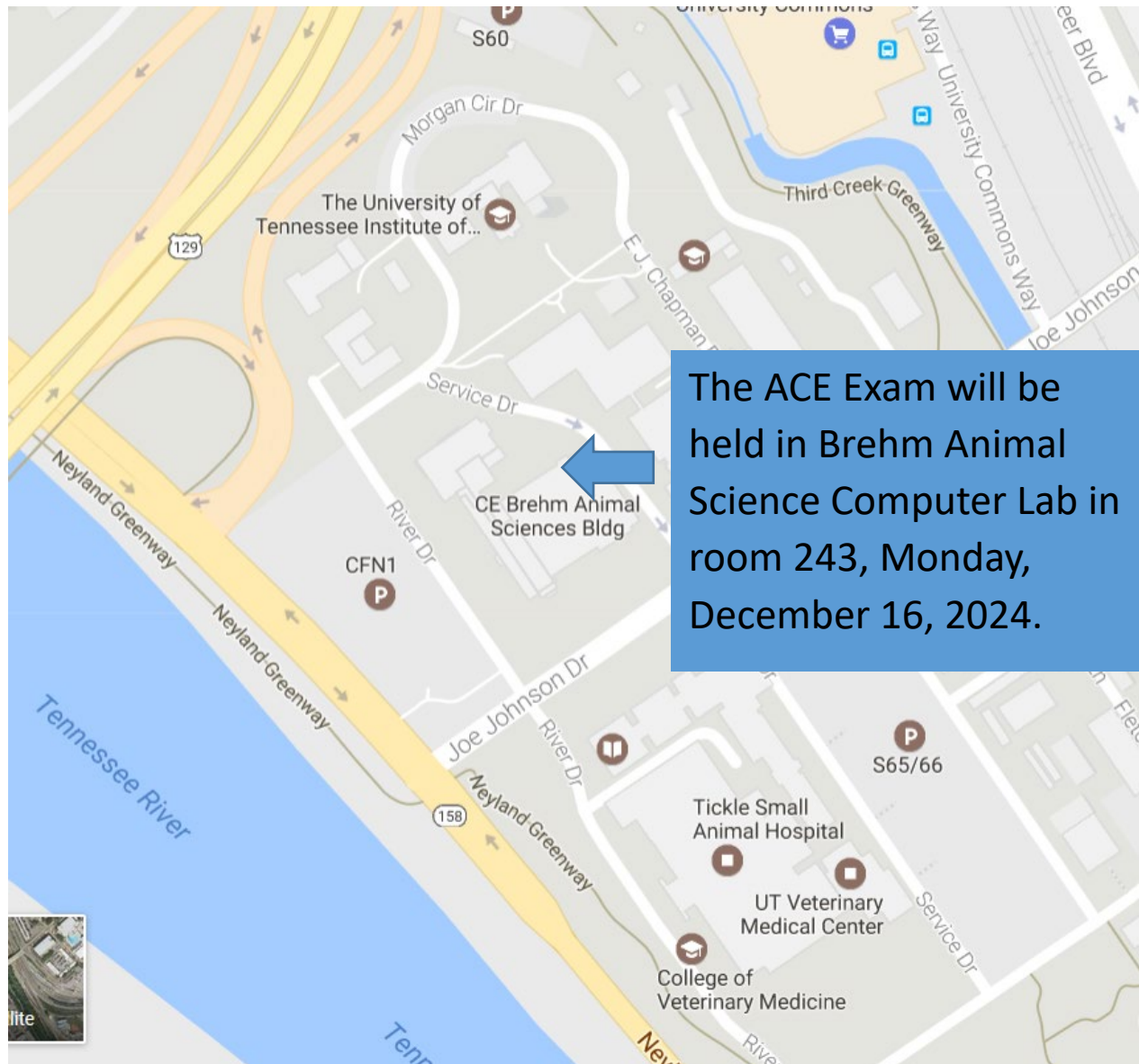
*The ACE exam will be given in room 243 Computer Lab of the Brehm Animal Science Building.

You can register for all classes of the ACE Prep Course at one time for a discounted price of \$300 or pay \$30 for each class as long as you register at least one week before the training date. Enrollment is limited to 25 per training date. One Tennessee pesticide applicator recertification unit earned in categories 7, 8, 10 and 12 per session. The course will only be held if at least 5 register before August 31st.

Register for the UT ACE Prep Course online at

<https://tiny.utk.edu/ACEPrepFall2024>

ACE Exam Location - UT Institute of Ag Campus Map



As long as it's after 5pm, you can park in lot CFN1.

We suggest you purchase the *IPM for the Urban Professional: A Study Guide for the Associate Certified Entomologist* from ESA (<https://entocert.org/ace/resources>) and the *NPMA Field Guide to Structural Pests* (<https://ebiz6personal.npmapestworld.org/UI/ProductDetails.html?productId=703>) prior to taking the training. The NPMA manual is also available as a downloadable phone app (available for [Apple iOS](#) or [Google](#)) and comes with an annual fee. The ESA study guide is discounted when you purchase it with your ACE application. In the past, shipping of the manuals has been greatly delayed, so order the manuals as soon as you sign up for the class!

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Precautionary Statement

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.

Disclaimer

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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