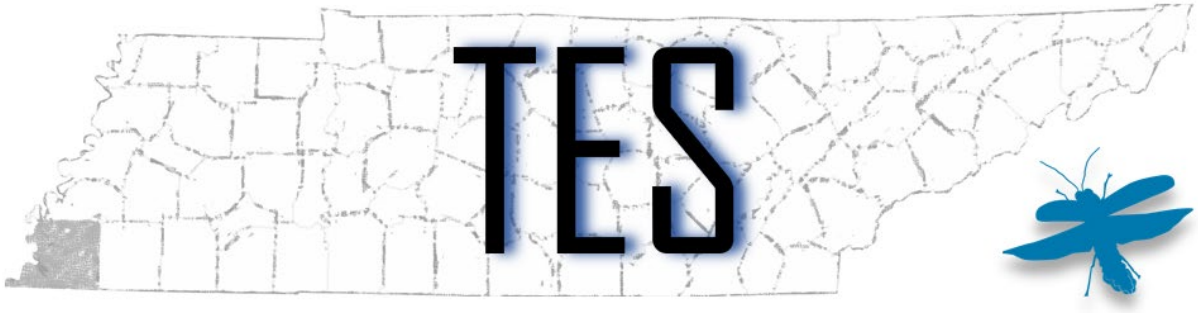
# *THE FIREFLY*

## Proceedings of the 51st Annual Meeting of the Tennessee Entomological Society




**October 14-15, 2024**

**300 University Center**
**The University of Memphis**
**Memphis, Tennessee**

# Table of Contents

**RICHARD E. CARON**

**OUTSTANDING ENTOMOLOGIST AWARD**

**NOMINATION FORM**

The Awards Committee of the Tennessee Entomological Society invites nominations from any TES member for the Richard E. Caron Outstanding Entomologist Award. The award is awarded periodically to TES members who have distinguished themselves by making outstanding contributions to entomology in Tennessee.

**Name of Nominee:**_____

**Brief Description of His/Her Qualifications for the Award**

_____

_____

_____

_____

_____

_____

**Name of Nominator** _____

**Phone Number of Nominee: Area Code ( )**_____

Please submit your nomination by **August 1, 2025** to:

Dr. Pat Parkman

University of Tennessee
Institute of Agriculture
370 Plant Biotechnology Building
Knoxville, TN 37996
jparkman@utk.edu
865-974-7135

# PROCEEDINGS OF THE 51st ANNUAL MEETING

## OCTOBER 14-15, 2024

# Keynote Address

## Entomology in Antarctica: Adaptations in the world's southernmost insect

**Nick Teets**
Associate Professor, Department of Entomology, The University of Kentucky, Lexington, KY

Insects are the most diverse and abundant animals on the planet, but Antarctica is the exception to that rule. Surviving its harsh terrestrial environments requires specialized adaptations, and only a handful of terrestrial arthropods call Antarctica home. Here, I will discuss adaptations required to live in this frozen desert, and I will also highlight challenges from anthropogenic inputs. Our lab has been conducting this work in the Antarctic midge, *Belgica antarctica*, the world's southernmost insect and only endemic species in Antarctica. This species is freeze-tolerant year around, but mechanical damage and cellular dehydration from internal freezing presents distinct physiological challenges. Thus, it is preferable for this species to remain dry and supercooled at low temperatures, and freezing (but not cold *per se*) is energetically costly. However, larvae can use a variety of environmental signals to quickly harden and improve outcomes after a freezing event. While freezing is challenging, the frequency and intensity of freezing events are rapidly changing. The climate on the Antarctic Peninsula is among the fastest warming on the planet, and winter is warming faster than any other season. Simulated winter warming in our laboratory indicates that warm winters lead to poor outcomes for larvae, likely due to energy drain. In more recent work, we also assessed *B. antarctica's* response to microplastics in the environment, and while microplastics were largely non-toxic, high concentrations may disrupt lipid metabolism. Taken together, our work shows that while they have a suite of adaptations for coping with extreme environments, human activity is causing substantial changes to Antarctica's terrestrial environments that present additional challenges.

# Student Presentations: Undergraduate Student Papers

## *Temnothorax longispinosus*: Chemical cues, worker response, and shift in foraging

**Clarence L. Cathy**[1], Elmira Umarova[2], and Philip Kohlmeier[2]
[1]Department of Biology, Christian Brothers University, Memphis, TN
[2]Department of Biological Sciences, University of Memphis, Memphis, TN

In social insects, specialized foragers fulfill the nutritional needs of all colony members. This study investigates the chemical cues used by *Temnothorax longispinosus* ant larvae to increase protein-foraging in foragers. Based on previous chemical analyses, we tested whether two larva-biased n-alkanes function as brood pheromones. Colonies lacking brood were exposed to synthetic versions of n-C27 and n-C29, which are more abundant in larvae than in workers. A combination of n-C27 and n-C29 increased protein-foraging to the same level as full larval Cuticular hydrocarbon

extracts, while n-C27 and n-C29 individually did not elicit the same response. n-alkanes can be found across insects and are involved in waterproofing the cuticle. Our findings provide the first evidence that a combination of two specific n-alkanes has been co-opted to additionally function as a brood pheromone in ants, influencing worker behavior to meet larval nutritional needs. This suggests a quantitative mechanism where the relative abundance of these compounds plays a key role. Understanding these chemical communications offers insights into colony homeostasis and social behavior evolution in ants. Our findings contribute to a broader understanding of how chemical signals mediate complex social interactions in eusocial organisms, providing a foundation for future studies on chemical communication.

## Evaluation of plant-derived essential oils as ambrosia beetle deterrents using tree bolt assays (1st Place Undergraduate Student Award)

**Wren V. Lawson**, Jason B. Oliver, Karla M. Addesso, and Nadeer N. Youssef
Otis L. Floyd Nursery Research Center, Tennessee State University, McMinnville, TN

Ambrosia beetles are common wood-boring pests in the nursery industry that damage stressed trees and can be detrimental to stock health. Previous research indicated certain essential oils could successfully deter other nursery pests like *Popillia japonica* Newman (JB) and *Solenopsis* spp. (IFA). The study aimed to determine if some of these essential oils could also successfully deter ambrosia beetle attacks. Five bolt assays were performed with hazelnut bolts treated with an experimental oil, Giant Arborvitae oil (GAO), Wintergreen oil, Peppermint oil, or a mixture of Wintergreen and Peppermint oils. Each oil was compared to a non-treated control and the current insecticide recommended for ambrosia beetles (permethrin). In order to attract ambrosia beetles, the bolts were filled with 50% ethanol. Tests were run at a local nursery and checked three to four times during a 7-9-day period. At each check, the number of attacks were recorded and the ethanol attractant was refilled. Tree bolts were also dissected at the end of each test to determine the species of ambrosia beetles that were attacking. Results indicated the experimental oil, GAO, and the Peppermint and Wintergreen oil combination did not reduce beetle attacks, but Wintergreen and Peppermint oils individually did reduce attacks relative to the control. Thus, Wintergreen and Peppermint oils have different effects on beetle deterrence when used alone or in combination. During the dissection, the four ambrosia beetle species identified were *Xylosandrus crassiusculus* (Motschulsky) (91.6%), *Cnestus mutilatus* (Blandford) (8.0%), *Xylosandrus germanus* (Blandford) (0.2%), and *Xyleborinus saxesenii* (Ratzeburg) (0.2%).

## Jonesboro citizen science mosquito project: Empowering communities in mosquito monitoring and control (2nd Place Undergraduate Student Award)

**Marin Hirata**
Biological Sciences Department, Arkansas State University, Jonesboro, AR

Mosquito management has long been a significant concern in the United States due to the role of many species as disease vectors. Research indicates climate change is shifting the geographical ranges of several mosquito genera, including *Aedes* and *Culex*, which pose a serious public health threat by introducing potential vectors of human and animal diseases. Effective control measures, such as eliminating standing water, require active community participation, particularly in Jonesboro, Arkansas, where rice fields create ample breeding sites. The Jonesboro Citizen Science Mosquito Project aimed to monitor mosquito populations in Jonesboro while educating residents about mosquito prevention strategies. Between June and August 2024, over 82,000 mosquitoes were collected from 189 locations across the city to identify hotspots with high reproductive rates. A Kruskal-Wallace test revealed a significant difference in mosquito abundance during at least one study month. These findings will inform local mosquito control efforts. Additionally, the data was shared with Vector Disease Control, a company specializing in mosquito control through truck spraying. In the future, this information can be utilized to optimize timing and locations for increased spraying, ultimately helping to reduce mosquito populations in the city.

## Chemical mate choice copying in *Drosophila melanogaster*

Bloo Mitchell[1], Alexandria Abott[1], **Ashanti Brown[1]**, Lacy Skinner[2],
Elmira Umarova[1], and Philip Kohlmeier[1]
[1]Department of Biological Sciences, University of Memphis, Memphis, TN
[2]Biology Department, Christian Brothers University, Memphis, TN

Mate choice is a critical decision, requiring time and energy to assess potential partners' genetic quality. Consequently, in many species females have evolved the ability to utilize social information by copying the mate choices of others, usually based on visual cues. However, chemical cues offer advantages, such as not requiring active observation of copulations. Using *Drosophila melanogaster*, we provide the first demonstration of chemical mate choice copying. Student females selected the same male genotype that a teacher female mated at higher frequently than expected by chance. Chemical mate choice copying requires sensing both male and female cues, which might indicate that that male genotype has been chosen by other females. Our work suggests that females, in the presence of mated females, increase choosiness at the virgin stage, elevating sexual selection on male traits. This study provides novel evidence that exploiting social information is more prevalent in flies than previously assumed.

## Transgenerational maternal effects on cold adaptation in the *Drosophila melanogaster*

**Elmira Umarova**, Bloo Mitchell, and Philip Kohlmeier
Department of Biological Sciences, University of Memphis, Memphis, TN

Global climate change and increased temperature stability impacts physiology and behavior of almost all organisms. Ectothermic animals, such as insects, in which all life processes directly depend on temperature are particularly affected by changes in temperatures. Transgenerational effects, in which parents induce phenotypic adaptations in offspring, have been suggested by theoretical studies to buffer such temperature fluctuations. However, empirical data demonstrating

the existence and unravelling the underlying mechanisms are scarce. We used the fruit fly *Drosophila melanogaster* and the neurogenetic toolkit exclusively available in this species to assess whether maternally induced temperature adaptation exists and whether the induction of these maternal effects is under the control the mother's thermosensory neurons. We first demonstrated that larvae of mothers grown at warm temperatures (+29°C) recovered faster from a cold shock than larvae of mothers raised at cold temperatures (+18°C). To test whether temperature perception by the mother's nervous system is involved in modulation maternally induced cold adaptation, we generated flies in which heat- or cold-perception pathways were genetically silenced. We found that silencing of cold-sensing neurons in mothers had no effect on larval cold adaptation whereas silencing heat-sensing neurons induced cold adaption even if their mothers were kept at warm temperatures. These findings suggest that the regulation of larval cold adaption is not a passive biochemical process but under active control of the mother's nervous system and that cold adaptation in offspring is suppressed if the mother's nervous system senses hot temperatures.

# Student Presentations: Graduate M.S. Student Papers

## Mid-south survey and biological assay of Tennessee brown marmorated stink bug – A feeding study

**Alexandra Crowder**, Sebe Brown, and Heather Kelly
Department of Entomology and Plant Pathology, West Tennessee Research and Education Center, University of Tennessee, Jackson, TN

The brown marmorated stink bug (BMSB), *Halyomorpha hays* (Stål), is an invasive species native to Asia that was first introduced to the US in the mid-1990s. BMSBs feed on field and vegetable crops, orchards and ornamentals during the growing season and enter diapause in homes during the winter. Being highly polyphagous, it is hypothesized that BMSBs can carry toxigenic molds between food sources, and ultimately increase mycotoxin loads in crops. During the summer of 2022, wild Tennessee populations of BMSBs were collected, surface sterilized, placed into individual modified feeding chambers lined with filter paper and stored in an incubator with optimal feeding conditions. BMSBs were allowed to feed on a 20% sucrose "purge" for 7 days after which BMSBs were re-sterilized, placed into new chambers with filter papers, and fed on their randomly assigned treatments for 14 days. Each filter paper and dissected stink bugs were placed onto either selective or non-selective media and allowed to grow for 7 days. Each plate was inspected to see if the BMSBs fed, if they passed the treatments through their digestive systems, and if the treatments grew out on media from the filter papers and BMSBs digestive tract. In 2024, the experiment was repeated with lab-raised BMSBs and a new diet formulation to determine if similar results occurred. These experiments will be paired with Mid-South surveys from 2022 and 2023 to determine if the same phenomenon is occurring outside of Tennessee. This information is critical for determining if BMSBs can pass toxigenic fungi through their digestive system, predicting mycotoxin presence from season to season, and what can be done to potentially reduce mycotoxin loads before harvest.

# Kudzu bug: Lethal temperature limits in west Tennessee

**Mitchell Adkins** and Leigh Boardman
Department of Biological Sciences, University of Memphis, Memphis, TN

Kudzu bug, *Megacopta cribraria*, is an invasive insect in the United States that uses kudzu (*Pueraria montana*) as its host plant. Since the discovery of kudzu bug in Georgia in 2009, it has rapidly spread across southeastern states reaching Tennessee in 2012. When overcrowding occurs, kudzu bugs may shift onto other host plants, including other legumes like soybean. If shifts to soybean become more prevalent, kudzu bugs pose a threat to Tennessee farmers. We investigated the high- and low-temperature limits of adult kudzu bug in western Tennessee to determine what temperatures and durations of exposure cause mortality. For upper lethal limits, kudzu bugs were collected in August and September 2024 from the University of Memphis Meeman Biological Station by sweep netting and placed into individual 2mL tubes with holes. After one day in the lab at 25°C (12 L/12D), individuals were exposed to 26°C, 29°C, 33°C, 38°C, 40°C, 42°C, 42.5°C, 44°C, or 46°C for 1h, 2h, 4h, 8h, or 12h. Each temperature-time combination consisted of at least three replicates of ten bugs (total n=1350). Mortality was scored 24h and 48h after treatments. For lower lethal limits, a similar approach was followed. Insects were collected in October 2024 and replicates were exposed to 2°C, -4°C, -8C, -12°C, or -16°C for 1h, 2h, 4h, 8h, or 12h durations (total n=750). As expected, temperature significantly affected mortality ($p = 0.02$). The upper lethal temperature causing 50% mortality (ULT50) for 8h duration was ~41°C. Initial data showed that the lower lethal temperature causing 50% mortality (LLT50) for 2h duration was ~-11°C. This suggests that kudzu bugs are chill-susceptible and die shortly before their supercooling point (i.e., temperature at which they freeze). These experiments will be repeated on overwintering adults to understand whether temperatures in Tennessee are likely to ever cause mortality in these insects.

# Direct and indirect effects of no-risk insecticides on the green lacewing *Chrysopa oculata* (Neuroptera: Chrysopidae)

**Binita Sigdel**, Kaushalya Amarasekare, and Manju Yogi
Department of Agricultural Sciences and Engineering, Tennessee State University, Nashville, TN

The green lacewing *Chrysopa oculata* (Neuroptera: Chrysopidae) is a common lacewing species in the southeastern US. It is a critical natural enemy contributing to arthropod pest management in fruits, vegetables, and field crops. Both adults and larvae of *C. oculata* are voracious predators and prey on various soft-bodied arthropods such as aphids, mites, and other insect pests. However, the widespread application of insecticides, including reduced-risk and no-risk formulations, increases concern about the potential impact of insecticides on the *C. oculata* population. The study aimed to find the lethal and sub-lethal effects of no-risk insecticides *on C. oculata*. Using distilled water as the control, we tested the impact of two insecticides (horticultural oil and insecticidal soap) using 10% and 100% of their high label rates recommended for vegetables. We paired adult males and females of *C. oculata* collected from the field and reared them in an environmental growth chamber under controlled temperature, photoperiod, and relative humidity. We used twenty-four-hour-old eggs, newly emerged second-instars, and adults with six replicates of five individuals each for eggs and larval studies and 15 pairs for adult experiments. We treated the adults and larvae

to treatment through contact, ingestion, and residual exposure, and eggs via contact exposure. We evaluated 24-, 48-, and 72-hour mortality of adults and larvae for direct effects and longevity, fecundity, and fertility of adults, larvae to adult developmental time, survival, adult sex ratio of larvae, and developmental time and survival from egg to adult emergence of eggs. We found that the hatchability of eggs was significantly reduced when they were exposed to different doses of insecticidal soap through direct contact. Also, these insecticides affected the developmental time and survivability of larvae. Using these insecticides cautiously during oviposition and larval emergence can lower the negative effects of these insecticides on *C. oculata*.

## Does low-temperature exposure induce immune upregulation in *Odontotaenius disjunctus* (Illiger)? (1st Place Graduate M.S. Student Award)

**Wesley Rhinehart** and Leigh Boardman
Department of Biological Sciences, University of Memphis, Memphis, TN

Low-temperature tolerance and immune responses share signaling pathways in some insects, so exposure to one factor may enhance tolerance to another. Hemocytes, the major immune cells in insects, are involved in most immune responses including phagocytosis and melanization. To investigate whether low temperature exposure results in immune upregulation, we used adult horned passalus beetles, *Odontotaenius disjunctus* (Illiger), a large, saproxylic beetle. The presence of *Chondronema passali*, a host-specific nematode found in the hemocoel of most *O. disjunctus*, has previously been shown to alter some behavioral and physiological metrics of these beetles. However, prior work in our lab has shown that *C. passali* load is not correlated with cold tolerance. In this study, adult beetles were first placed into an ice slurry (~0°C) to induce chill coma for 1h, then recovery was timed (n=12). Control beetles (n=9) were handled but not exposed to cold. Immune activity was measured, 24h after cold exposure, by inserting nylon monofilament into the beetle's thorax. After 24h, filaments were removed and imaged to measure the strength of the melanin response. Beetles were euthanized and dissected to assess sex and nematode load. There was no difference in melanization response between low temperature exposed and control beetles ($p=0.13$). Nematode load was not significantly correlated with melanization response regardless of low temperature exposure ($p>0.05$ in all cases). These results suggest that short-term exposure to low temperatures does not result in increased melanization response in *O. disjunctus*. Future assays will investigate the circulating hemocyte count and phenoloxidase activity to further quantify the immune responses in these beetles.

## A comparison of dung beetle diversity and abundance from two studies in northeast Arkansas 15 years apart (2nd Place Graduate M.S. Student Award)

**Becca Lett** and Tanja McKay
Biological Sciences Department, Arkansas State University, Jonesboro, AR

The cattle industry has a significant role in the economy of several states, including Arkansas. Approximately 1.7 million cattle grazed on 2,428,114 hectares of pasture were reported in the state in 2022. Effective land management is crucial to sustain the productivity and longevity of these grazing systems. Dung beetles, recognized as keystone species, play a significant role in maintaining these habitats due to their essential ecological functions. These functions include dung removal, soil aeration, nutrient cycling, seed burial, and pest reduction, all of which contribute to the enhancement of pasture health. However, common cattle management practices, such as antibiotics, can adversely affect dung beetle populations. Moreover, increasing average temperatures have been shown to diminish the reproductive capacity of dung beetles, resulting in a decrease in populations. In the study region, winter temperatures are warmer, with December 2021 being 5.5 warmer than any other December since 1985. In 2007 and 2008, a dung beetle study was conducted at the Arkansas State University Teaching and Research Center. Almost 250,000 individuals representing 22 species were collected during this study. In 2022 and 2023, a follow-up dung beetle study was conducted in the same location. In the current study, approximately 10,000 individuals representing 23 species were collected. Diversity across the two time periods was compared using Shannon's and Simpson's diversity, with both index values being greater in the current period. This study also aimed to compare the abundance of the four most abundant species during both periods: *Labarrus pseudolividis*, *Onthophagus gazella*, *O. hecate*, and *O. taurus*. Three species had significant changes in abundance *L. pseudolivids* decreased since 2008, whereas *O. hecate* and *O. taurus* increased in abundance. This work helps better understand dung beetle populations in the current climate and can be helpful in future works looking at climate change on dung beetles.

## Student Presentations: Graduate Ph.D. Student Papers

### Decline and possible extinction of the large chestnut weevil (*Curculio caryatrypes*) and its placement in the phylogeny of nut weevils (Curculionidae: *Curculio*)

**Michael Charles** and Duane McKenna
Department of Biological Sciences, University of Memphis, Memphis, TN

The larvae of *Curculio caryatrypes* (large chestnut weevil) are only known to feed in the nuts of *Castanea dentata* (American chestnut). The introduction of *Cryphonectria parasitica* (chestnut blight) to North America in 1904 resulted in the functional extinction of the American chestnut and the extinction of several of its host-specialist insect associates, possibly including the large chestnut weevil. We examined American chestnut trees in Pennsylvania and Maryland during September 2022 for evidence of large chestnut weevils. Historically, these areas were at the core of the distribution of American chestnut and were known to host the large chestnut weevil. Only six of the 61 American chestnut trees examined were reproductive. No evidence of the large chestnut weevil was encountered at any of the sites visited, and we consider it likely that this species is extinct across its former range in eastern North America or at least no longer present in the areas surveyed during this study. However, it is possible (though unlikely) that the species may persist elsewhere, such as in southern Maine, where there are records of mature, fruiting trees, or

in Wilkinson County, Georgia, where the last known large chestnut weevil was collected in 1997. Progress towards reconstructing the phylogeny of *Curculio* includes 40 species in-hand for DNA extraction and sequencing using target enrichment methods, and a first small set of species already successfully sequenced, including the large chestnut weevil.

## Genomic analyses of hybrids highlight chromosomal inversions as key contributors to the accumulation of reproductive barriers between the two invasive fire ant species *Solenopsis invicta* and S. *richteri* (2nd Place Graduate Ph.D. Student Award)

**Allyson Dekovich[1],** Sydney Eriksson[2], Lydia Uptain[3], Margaret Station[1], Sean Ryan[4], Kenneth G. Ross[5], and DeWayne Shoemaker[1]
[1]Department of Entomology and Phant Pathology, University of Tennessee, Knoxville, TN
[2]Separtment of Mathematics and Department of Computer Science, Hamilton College, Clinton, NY
[3]Department Biology and Department of Chemistry and Physics, University of North Alabama, Florence, AL
[4]Department of Ecological and Biological Sciences, Exponent, Menlo Park, CA
[5]Department of Entomology, University of Georgia, Athens, GA

Understanding the genetic underpinnings of speciation is a fundamental goal of evolutionary biology. Speciation may occur when reproductive barriers develop between two populations due to reduced or restricted gene flow; however, studying speciation empirically remains challenging and has sparked extensive debate among evolutionary biologists. One approach to investigating reproductive isolation is through the study of hybrid zones -- geographical regions where the boundaries between two genetically distinct populations weaken, resulting in the production of viable hybrid offspring. These "natural laboratories", coupled with remarkable advancements in next-generation sequencing technologies, are ideal for investigating the genetic architecture of reproductive isolation – that is, the organization and arrangement of genes contributing to genetic divergence between two populations. Here, we examine a prominent hybrid zone between two invasive fire ants, *Solenopsis invicta* and *S. richteri*, in the southeastern United States. While previous genetic studies found no evidence of hybridization between these species in overlapping areas of their native South American range, a large hybrid zone has formed between these ants in their introduced range. Genomic cline models utilizing reduced representation sequencing (RADSeq) data identified 364 SNP loci that exhibited patterns of impeded introgression (i.e., barriers to gene flow) within the hybrid genomic background. Interestingly, many of these SNPs were found to co-localize on four specific chromosomes (2, 4, 10, and 13). A comparison of patterns of genetic differentiation (FST), linkage disequilibrium (LD), and SNP associations suggests that inversions, which are chromosomal rearrangements in which DNA segments are reversed, are likely responsible for the restricted gene flow (impeded introgression) observed between *S. invicta* and *S. richteri* within these genomic regions. Our findings present a unique opportunity to explore the genomic differences between these two fire ant species – an opportunity that would not have otherwise been available due to their lack of hybridization in their native range.

# Investigating the damage potential of clouded plant bugs (*Neurocolpus nubilus* (Say)) in ThrynOn cotton (1st Place Graduate Ph.D. Student Award)

**Nathan Arey** and Sebe Brown
Department of Entomology and Plant Pathology, West Tennessee Research and Education Center, University of Tennessee, Jackson, TN

The clouded plant bug (*Neurocolpus nubilus* (Say)) is a documented pest of cotton (*Gossypium hirsutum* L.) present in ten cotton producing states, including Tennessee. Cotton expressing the *Bacillus thuringiensis* (Bt) Mpp51Aa2 (formerly Cry51Aa2.834_16) protein, known as ThryvOn™ Technology, was fully commercialized in the United States for the 2023 growing season. Previous research has shown this insecticidal crystal protein to be effective against thrips and various plant bugs, including tarnished plant bugs, western tarnished plant bugs, and cotton fleahoppers, with piercing-sucking feeding behaviors. The impact of Mpp51Aa2 on clouded plant bugs is currently unknown. The primary objective of this study was to assess the impact of cotton expressing Mpp51Aa2 on clouded plant bug feeding on cotton squares. A no-choice caged feeding assay was conducted with adult and late instar clouded plant bug nymphs on cotton fruiting branches to assess the impact of clouded plant bug feeding on ThryvOn and Non-ThryvOn square retention under controlled greenhouse conditions. Preliminary data from this study will be presented. The information gained from this study is critical to developing management guidelines in Tennessee for clouded plant bugs in this newly commercialized cotton technology.

## Non-Student Presentations

# Clustering together: Winter brood production in honey bee colonies

**Jennifer Tsuruda[1],** Rogan Tokach[2], Lewis Bartlett[3], Carolyn Breece[4], Omar Caranton[5], Priya Chakrabarti[5], Steven Cook[6], Michael Goblirsch[7], Cameron Jack[8], Reed Johnson[9], Danielle Kroh[10], Pierre Lau[11], Hongmei Li-Byarlay[10], Patrick McCalman[12], William Meikle[13], Charlie Parton[14], Juliana Rangel[15], Frank Rinkevich[16], Stephanie Rogers[17], Ramesh Sagili[4], Allyson Shabel[17], Audrey Sheridan[5], Mark Sweatman[18], Ellen Topitzhofer[19], Robyn Underwood[20], Milagra Weiss[13], and Geoff Williams[2].
[1]Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN
[2]Department of Entomology and Plant Pathology, Auburn University, Auburn, AL
[3]Department of Entomology, University of Georgia, Athens, GA
[4]Department of Horticulture, Oregon State University, Corvallis, OR
[5]Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology, Mississippi State University, Starkville, MS
[6]USDA, Beltsville, MD
[7]USDA, Poplarville, MS
[8]Entomology and Nematology Department, University of Florida, Gainesville, FL

[9]Cullaborate LLC, Baltimore, MD
[10]Central State University, Wilberforce, OH
[11]USDA, Stoneville, MS
[12]Alabama beekeeper
[13]USA, Tucson, AZ
[14]Tennessee beekeeper
[15]Department of Entomology, Texas A&M University, College Station, TX
[16]USDA, Baton Rouge, LA
[17]Department of Geosciences, Auburn University, Auburn, AL
[18]Alabama Extension
[19]South Carolina beekeeper
[20]Department of Entomology, Cornell University, Ithaca, NY
[21]Penn State Extension

The status of capped brood in honey bee colonies during winter is critical information for beekeepers when choosing an appropriate treatment for controlling parasitic Varroa destructor mites. Predictable periods without brood are sometimes assumed for the winter, but may not be the case, especially in regions with mild winters. To help beekeepers with management decisions during winter and early spring, land-grant universities, USDA-ARS labs, a statewide Extension system, and beekeepers are cooperatively monitoring colonies from mid-fall to mid-winter. Study participants selected up to 10 of their colonies for the study and estimated the amount of capped brood (measured in terms of frame coverage) on each side of frames every two weeks (mid-Oct. through the end of Feb.). The total amount of capped brood was calculated for each colony and the average was calculated per participant. Additionally, estimations of adult bee populations, management (feeding and Varroa treatment), and survival were also recorded. Maps were created and posted in a timely manner so beekeepers could make appropriate action for mite treatments given the data for their area. Temporal and regional trends of brood production were observed, with some differences across years, locations in close proximity, and ultimately, in survival of the colonies. Future directions will include comparing monitoring year, queen source stock, and management. Additionally, beekeepers will be surveyed about the value and use of the information to inform future directions and projects.

## Shining light on species delimitation: How spectrophotometry could unravel the *Chrysobothris femorata* species complex

**Alfred Daniel Johnson[1],** Cynthia Perkovich[2], Anjin Chang[3], and Karla Addesso[1]
[1]Otis L. Floyd Research Center. Department of Agriculture, Tennessee State University, McMinnville, TN
[2]Department of Biology and Toxicology, Ashland University, Ashland, OH
[3]Department of Agricultural Sciences and Engineering, College of Agriculture, Tennessee State University, Nashville, TN

The flatheaded borer, *Chrysobothris femorata* (Olivier), (Coleoptera: Buprestidae) is part of a species complex comprising 12 similar-looking species. This beetle has a wide host range and poses significant problems in commercial nurseries and urban landscapes, where it can cause the

rapid decline of economically important trees. Adult beetles are "bullet-shaped" with large compound eyes. In most cases, identifying the species requires examining the male genitalia, making species determination difficult without destructive sampling. Also, there are only handful of experts in the country to confirm the species identity. In this context, to provide a non-destructive method for species delimitation and to create a spectrophotometry database of these beetles, we spectrally measured the dorsal side, head + thorax, elytra, abdominal tip, ventral side, and ventral tip of the beetles. Using six samples and three replications for each species, we recorded L*, a*, and b* values and visible spectral readings from 360 to 740 nm for each body part. We performed Principal Component Analysis and Linear Discriminant Analysis and found significant spectral differentiation between species. Females of *C. femorata* and *C. shawnee* were clearly distinguished in our results. Additionally, *C. femorata* and *C. sexignata* (outgroup) adults emerging from the same host red maple plants could also be distinguished by spectral characteristics. We aim to improve the sample size in the future and to focus on the most informative body parts of the beetles to use spectrophotometry in delimitation of *Chrysobothris femorata* species complex.

## Phylogeny and evolution of beetles

**Duane McKenna**
Department of Biological Sciences, University of Memphis, Memphis, TN

In this talk, I will present our current understanding of beetle (Coloeptera) phylogeny and evolution, highlighting the timing and patterns of beetle diversification. I will introduce the major groups of beetles (suborders, series and superfamilies) and discuss their interrelationships, providing an overview of key evolutionary events. Special attention will be given to the evolution of beetles in association with plants, including evidence of beetle and angiosperm co-diversification. Additionally, I will explore how horizontal gene transfers from bacteria and fungi contributed to the Mesozoic diversification and convergent trophic evolution of herbivorous beetles, particularly in the clades Phytophaga and Buprestoidea.

## Extension agents and pest management professionals increase confidence in assisting individuals with suspected delusional infestation

**Karen Vail**[1], Nancy Hinkle[2], and The University of Tennessee One Health Initiative Delusional Parasitosis Working Group, and The Southern Region Delusional Infestation Working Group

[1]Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN
[2]Department of Entomology, University of Georgia, Athens, GA

Delusional infestation (DI) is a false belief that arthropods or other parasites are infesting a person, their belongings or environment, even though evidence is lacking. The University of Tennessee One Health Initiative Delusional Parasitosis Working Group (UTOHIDPWG) created three publications to aid Extension agents working with suspected DI. The Southern Region Delusional

Infestation Working Group (SRDIWG), with the same goal, modified these publications to produce Unknown Skin Irritations: A General Guide, Extension Agent Protocol for Unknown Skin Irritations and Suspected DI Cases, and A Guide to Arthropods Associated with Delusional Infestations. These SRDIWG collaborators from 12 of 13 US southern states have thus far given 22 DI presentations to 561 Extension agents, pest management professionals, medical entomologists, or public health professionals in eight states to steer individuals with suspected DI to healthcare providers. Substantial impacts of these presentations were achieved. Compared to pre-training responses, an 85% increase in respondents understood or fully understood the condition of delusional infestation and their responsibility in assisting. A 116% increase in having confidence or extreme confidence in safely assisting individuals with DI was noted post-training. The next steps should be to document the effects of these trainings on suspected DI individuals reaching a healthcare provider and ultimately going into remission.

# Spotted lanternfly: Present and future

**Midhula Gireesh**[1] and Cindy Bilbrey[2]
[1]Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN
[2]Tennessee Department of Agriculture, Nashville, TN

The spotted lanternfly, *Lycorma delicatula* (White) (SLF) is a planthopper (Hemiptera: Fulgoridae) whose nymphs and adults feed on many plants. This pest has a needlelike mouthpart that it uses to suck sap from branches and twigs. SLF is native to China, India and Vietnam and has been introduced into Korea, Japan and Taiwan. It was first detected in the United States in Pennsylvania in September of 2014. In September 2023, the Tennessee Department of Agriculture confirmed detection of SLF in Tennessee. SLF adults were first found near a railroad track in Davidson County in middle Tennessee where train cars are often left for a few days. Since its initial detection, SLF populations were confirmed in Wilson (Middle TN) and Sullivan County (East TN). To better formulate an action plan for spotted lanternfly research and extension in the Southeastern United States, a "A New IPM Working Group to Address Spotted Lanternfly Problems in Specialty Crops in the Southeastern US" was formed as a part of Southern IPM center grant. The long-term goal is to develop a collaborative working group where researchers, Extension personnel, growers, industry partners and other stakeholders can share knowledge and ideas freely. This will lead to the development of a pest management guide for SLF, compilation of presentations, reports, and other products, which ultimately will improve the efficiency and effectiveness of managing SLF in the South.

# Attendance Roster of the 2024 Annual Meeting of the Tennessee Entomological Society

| Regular Members | Affiliation |
|---|---|
| Steven Hamilton | Austin Peay State University |
| Steve Murphree | Belmont University |
| Karl Nicholas Rohrer | Christian Brothers University |
| Karla Addesso | Tennessee State University |
| Kaushalya G Amarasekare | Tennessee State University |
| Alfred Daniel Johnson | Tennessee State University |
| Nick Teets | University of Kentucky |
| Leigh Boardman | University of Memphis |
| Ashanti Brown | University of Memphis |
| Shawn Brown | University of Memphis |
| Philip Kohlmeier | University of Memphis |
| Duane McKenna | University of Memphis |
| Na Ra Shin | University of Memphis |
| Kassie Hollabaugh | University of North Alabama |
| Midhula Gireesh | University of Tennessee |
| Frank A. Hale | University of Tennessee |
| Rebekka Horn | University of Tennessee |
| James Patrick Parkman | University of Tennessee |
| Jennifer Tsuruda | University of Tennessee |
| Karen M Vail | University of Tennessee |
| **Student Members** | |
| Marin Hirata | Arkansas State University |
| Rebecca Lent | Arkansas State University |
| Clarence L Cathy | Christian Brothers University |
| Wren Vaness Lawson | Middle Tennessee State University |
| Jacob Bryce White | Middle Tennessee State University |
| Binita Sigdel | Tennessee State University |
| Manju Yogi | Tennessee State University |
| Mitchell Adkins | University of Memphis |
| Kimberly Elizabeth Baldwin | University of Memphis |
| Michael A. Charles | University of Memphis |
| Da Nesja James-Wells | University of Memphis |
| Wesley Rhinehart | University of Memphis |
| Elmira Umarova | University of Memphis |
| Nathan Arey | University of Tennessee |
| Alexandria Crowder | University of Tennessee |
| Allyson Dekovich | University of Tennessee |

| Government Members | Affiliation (continued) |
|---|---|
| Cheryl Clausel | Shelby County Health Department Vector Control |
| Andrew Insch | Shelby County Health Department Vector Control |
| Cindy Bilbrey | Tennessee Department of Agriculture |
| Charles D Burton | Tennessee Department of Agriculture |
| Lisa Post Lawhead | Tennessee Department of Agriculture |
| Myah Floyd Reeves | Tennessee Department of Agriculture |
| Michael Studer | Tennessee Department of Agriculture |
| Robert Boyle | United States Department of Agriculture |
| Shannon James | United States Department of Agriculture |

| Industry Members | |
|---|---|
| Seth Permenter | BASF Corporation |
| Tim Adcock | Diligence Technologies, Inc. |

# Board of Directors
# (2024)

President: Jennifer Tsuruda (2023-2024), jtsuruda@utk.edu
Present-elect: Leigh Boardman (2023-2024), leigh.boardman@memphis.edu
Past President: Karen Vail (2023-2024), kvail@utk.edu
Secretary/Treasurer: Karla Addesso (2022-2025), kaddesso@tnstate.edu
Editor: Peter Obernauer (2022-2024), pobernauer@vdci.net
Historian: Frank Hale (2021-2026), fhale1@utk.edu
Member-at-large: Midhula Gireesh (2023-2025), mgireesh@utk.edu
Member-at-large: Cindy Bilbrey (2022-2024), Cindy.Bilbrey@tn.gov

# Committees
# (2023-2024)

**Auditing**
Frank Hale, Chair
Steve Murphree

**Awards**
Pat Parkman, Chair
Kaushalya Amarasekare

**Constitution/Operating Procedures**
Jason Oliver, Chair
Karla Addesso

**Insect Festival**
Steve Murphree, Chair
Alfred Johnson
Matthew Longmire

**Local Arrangements**
Leigh Boardman, Chair

**Membership**
Kaushalya Amarasekare, Chair
Binita Sigdel

**Nominations**
Karen Vail, Co-chair
Steve Murphree, Co-chair

**Predictions/Evaluations**
Cindy Bilbrey, Chair
Jason Oliver

**Proclamations**
Steve Hamilton, Co-chair
Steve Murphree, Co-chair

**Program**
Leigh Boardman, Chair
Jennifer Tsuruda

**Publications/Editorial**
Peter Obenauer, Chair
Jennifer Tsuruda
Frank Hale

**Publicity**
Karla Addesso, Co-chair
Karen Vail, Co-chair

Minutes of the Tennessee Entomological Society can be found at:
https://tes.tennessee.edu/minutes-from-meetings/

# Historical Notes

## Presidents of the Tennessee Entomological Society (1973 – Present)

| President | Term | Affiliation |
|---|---|---|
| Mendell Snodgrass | `73 - `74 | United States Department of Agriculture |
| Omar Smith | `74 - `75 | Memphis State University |
| Don Clements | `75 - `76 | Cook's Pest Control |
| Gary Lentz | `76 - `77 | University of Tennessee |
| Chester Gordon | `77 - `78 | Tennessee Department of Agriculture |
| Gene Burgess | `78 - `79 | University of Tennessee |
| Reid Gerhardt | `79 - `80 | University of Tennessee |
| Harold Bancroft | `80 - `81 | Memphis State University |
| Joe Dunn | `81 - `82 | American Cyanamid Company |
| Bill Van Landingha | `82 - `83 | Tennessee Department of Agriculture |
| Carl Brown | `83 - `84 | Memphis State University |
| Charles Pless | `84 - `85 | University of Tennessee |
| Michael E. Cooper | `85 - `86 | Tennessee Department of Agriculture |
| Elmo Shipp | `86 - `87 | Mobay |
| Bill Shamiyeh | `87 - `88 | University of Tennessee |
| Harvey Barton | `88 - `89 | Arkansas State University |
| Harry Williams | `89 - `90 | University of Tennessee |
| Bruce Kauffman | `90 - `91 | Tennessee Department of Agriculture |
| Jamie Yanes, Jr. | `91 - `92 | American Cyanamid Company |
| Jerome Grant | `92 - `93 | University of Tennessee |
| Russ Patrick | `93 - `94 | University of Tennessee |
| Lynn Snodderly | `94 - `95 | Tennessee Department of Agriculture |
| Paris Lambdin | `95 - `96 | University of Tennessee |
| Frank Hale | `96 - `97 | University of Tennessee |
| Steve Murphree | `97 - `98 | Belmont University |
| Cletus Youmans | `98 - `99 | American Cyanamid Company |
| Catherine Mannion | `99 - `00 | Tennessee State University Nursery Crop Research Center |
| Gray Haun | `00 - `01 | Tennessee Department of Agriculture |
| Steven Hamilton | `01 - `02 | Austin Peay State University |
| John Skinner | `02 - `03 | University of Tennessee |
| Jason Oliver | `03 - `04 | Tennessee State University Nursery Crop Research Center |
| Scott Stewart | `04 - `05 | University of Tennessee |
| Cindy Bilbrey | `05 - `06 | Tennessee Department of Agriculture |
| Karen Vail | `06 - `07 | University of Tennessee |
| Don Sudbrink | `07 – `08 | Austin Peay State University |
| Bruce Kaufmann | `08 - `09 | University of Tennessee |

| President (continued) | Term (continued) | Affiliation (continued) |
|---|---|---|
| David Cook | `09 - `10 | University of Tennessee |
| Cletus Youmans | `10 - `11 | BASF Corporation |
| Gene Burgess | `11 - `12 | University of Tennessee |
| Mike Struder | `12 - `13 | Tennessee Department of Agriculture |
| Steve Hamilton | `13 - `14 | Austin Peay State University |
| Paris Lambdin | `14 - `15 | University of Tennessee |
| Amy Dismukes | `15 - `16 | University of Tennessee |
| Greg Wiggins | `16 - `17 | University of Tennessee |
| Pat Parkman | `17 - `18 | University of Tennessee |
| David Cook | `18 - `19 | University of Tennessee |
| Karla Addesso | `19 - `20 | Tennessee State University |
| Kaushalya Amarasekara | `20 - `21 | Tennessee State University |
| Steve Murphree | `21 - `22 | Belmont University |
| Karen Vail | `22 - `23 | University of Tennessee |
| Jennifer Tsuruda | `23 - `24 | University of Tennessee |

## Secretary-Treasurers of the Tennessee Entomological Society (1973 – 1991)

| Secretary-Treasurer | Term | Affiliation |
|---|---|---|
| Jimmy White | ’73 – ‘76 | Tennessee Department of Agriculture |
| Harold Bancroft | `76 - `79 | Memphis State University |
| Lyle Klostermeyer | `79 - `82 | University of Tennessee |
| Bill Shamiyeh | `82 - `85 | University of Tennessee |
| Richard Caron | `85 - `91 | University of Tennessee |

## Secretaries of the Tennessee Entomological Society (1991 – 2022)

| Secretary | Term | Affiliation |
|---|---|---|
| Gary Lentz | `91 - `02 | University of Tennessee |
| Gene Burgess | `02 - `08 | University of Tennessee |
| Steve Murphree | `08 - `22 | Belmont University |

## Treaserers of the Tennessee Entomological Society (1991 – 2022)

| Treasurer | Term | Affiliation |
|---|---|---|
| Harvey Barton | `91 - `97 | Arkansas State University |
| Steve Powell | `97 - `22 | Tennessee Department of Agriculture |

## Secretary-Treasurers of the Tennessee Entomological Society (2022 – Present)

| Secretary-Treasurer | Term | Affiliation |
|---|---|---|
| Karla Addesso | `22 - `25 | Tennessee State University |

## Editors of the Tennessee Entomological Society (1991 – Present)

| Editor | Term | Affiliation |
|---|---|---|
| Gray Huan | `91 - `99 | Tennessee Department of Agriculture |
| Lynn Snodderly | `00 - `01 | Tennessee Department of Agriculture |
| Gray Haun | `01 - `09 | Tennessee Department of Agriculture |
| Jerome Grant | `09 - `12 | University of Tennessee |
| Karla Addesso | `16 - `19 | Tennessee State University |
| Gregg Wiggins | `20 - `22 | University of Tennessee |
| Peter Obernauer | `22 - `24 | Vector Disease Control International |

## Members-at-Large of the Tennessee Entomological Society (1987 – Present)

| Member-at-Large | Term | Affiliation |
|---|---|---|
| Gary Lentz | `87 - `88 | University of Tennessee |
| Blake Bevill | `87 - `88 | Arkansas State University |
| Michael E. Cooper | `88 - `89 | Tennessee Department of Agriculture |
| Jay P. Avery | `88 - `89 | University of Tennessee |
| Joe Dunn | `89 - `90 | American Cyanamid Company |
| Charles Pless | `89 - `90 | University of Tennessee |

| Member-at-Large (continued) | Term (continued) | Affiliation (continued) |
|---|---|---|
| Paris Lambdin | `90 - `91 | University of Tennessee |
| Jim Keener | `90 - `91 | Tennessee Department of Agriculture |
| Steve Powell | `91 - `92 | Tennessee Department of Agriculture |
| Lee Greer | `91 - `92 | Valent |
| Alan Hopkins | `92 - `93 | Miles, Inc. |
| Donald Ourth | `92 - `93 | University of Memphis |
| Mark Carder | `93 - `94 | University of Tennessee |
| Rich Emerson | `93 - `94 | Tennessee Department of Agriculture |
| Ray Nabors | `94 - `95 | University of Missouri |
| Alan Hopkins | `94 - `95 | Miles, Inc. |
| Steve Powell | `95 - `96 | Tennessee Department of Agriculture |
| Jim Bogard | `95 - `96 | Tennessee Department of Agriculture (Retired) |
| Hans Chaudhary | `96 - `97 | Tennessee Department of Agriculture |
| Cletus Youmans | `96 - `97 | American Cyanamid Company |
| Larry Latson | `97 - `98 | Lipscomb University |
| Catherine Mannion | `97 - `98 | Tennessee State University |
| Karen Vail | `98 - `99 | University of Tennessee |
| Roberto Pereira | `98 - `99 | University of Tennessee |
| Jim Keener | `00 - `01 | Tennessee Department of Agriculture |
| Lee Greer | `00 - `01 | Valent |
| Frank Hale | `01 - `02 | University of Tennessee |
| Ray McDonnell | `01 - `02 | Tennessee Department of Agriculture |
| David Cook | `06 - `07 | University of Tennessee |
| Steve Murphree | `06 - `07 | Belmont University |
| Steve Hamilton | `07 - `08 | Austin Peay State University |
| Clint Strohmeyer | `07 - `08 | Tennessee Division of Forestry |
| Gray Haun | `08 - `09 | Tennessee Department of Agriculture |
| Mike Struder | `08 - `09 | Tennessee Department of Agriculture |
| Steve Hamilton | `09 - `10 | Austin Peay State University |
| Mike Struder | `09 - `10 | Tennessee Department of Agriculture |
| Steve Hamilton | `10 - `11 | Austin Peay State University |
| Mike Struder | `10 - `11 | Tennessee Department of Agriculture |
| David Cook | `11 - `12 | University of Tennessee |
| Steve Hamilton | `11 - `12 | Austin Peay State University |
| Amy Dismukes | `12 - `13 | University of Tennessee |
| Amy Dismukes | `12 - `13 | University of Tennessee |
| David Cook | `13 - `14 | University of Tennessee |
| Amy Dismukes | `13 - `14 | University of Tennessee |
| Karla Addesso | `14 - `15 | Tennessee State University |
| David Cook | `14 - `15 | University of Tennessee |
| Karla Addesso | `15 - `16 | Tennessee State University |
| David Cook | `15 - `16 | Tennessee State University |
| Gene Burgess | `16 - `17 | University of Tennessee (Retired) |

| Member-at-Large (continued) | Term (continued) | Affiliation (continued) |
|---|---|---|
| Gray Haun | `16 - `18 | Tennessee Department of Agriculture (Retired) |
| Amy Dismukes | `19 - `21 | University of Tennessee |
| Karen Vail | `20 - `21 | University of Tennessee |
| Pat Parkman | `21 - `22 | University of Tennessee |
| Amy Dismukes | `21 - `23 | University of Tennessee |
| Cindy Bilbrey | `22 - `24 | Tennessee Department of Agriculture |
| Midhula Gireesh | `23 - `25 | University of Tennessee |

## Historians of the Tennessee Entomological Society (1973 – Present)

| Historian | Term | Affiliation |
|---|---|---|
| Charles Pless | `73 - `76 | University of Tennessee |
| Herb Morgan | `76 - `79 | United States Department of Agriculture |
| Mendell Snodgrass | `79 - `82 | United States Department of Agriculture |
| Russ Patrick | `82 - `92 | University of Tennessee |
| Henry Williams | `92 - `01 | University of Tennessee (Retired) |
| Frank Hale | `01 - `26 | University of Tennessee (Retired) |

## Honorary Members of the Tennessee Entomological Society (1982 – Present)

| Honorary Member | Year | Affiliation |
|---|---|---|
| Jimmy White | 1982 | Tennessee Department of Agriculture |
| Mendell Snodgrass | 1983 | United States Department of Agriculture |
| Carl Brown | 1985 | Memphis State University |
| Myrtice Snodgrass | 1985 | Knoxville, Tennessee |
| John A. Hammett | 1987 | Tennessee Department of Agriculture |
| Joe C. Dunn | 1990 | American Cyanamid Company |
| Harry Williams | 1997 | University of Tennessee (Retired) |

# Harry E. Williams Award (est. 2002)
# Recipients of the Tennessee Entomological Society
# (2002 – Present)

| Recipient | Year | Location |
|---|---|---|
| Kimberly Woodard | 2002 | Trousdale County, Tennessee |
| Liam Black and Kimberly Woodard | 2003 | Hardeman County, Tennessee and Trousdale County, Tennessee |
| Reed Avent | 2006 | Bolivar, Tennessee |
| Andy Brown | 2008 | Coffee County, Tennessee |
| Phillip Adams | 2009 | Burns, Tennessee |
| Johnathan Belcher | 2010 | Rutherford County, Tennessee |
| Kade Parker | 2011 | Maryville, Tennessee |
| Kade Parker | 2012 | Maryville, Tennessee |
| Steven Davis | 2013 | Loudin County, Tennessee |
| Angel Chaffin | 2014 | Sevier County, Tennessee |
| Perrein Heselschwerdt | 2015 | Claiborne County, Tennessee |
| - | 2016 | (No award given) |
| Keaton Pennick | 2017 | Weakley County, Tennessee |
| Samatha Bussell | 2018 | Macon County, Tennessee |
| - | 2019 | (No award given) |
| Benjamin Fisk | 2020 | Lincoln County, Tennessee |
| - | 2021 | (No award given) |
| - | 2022 | (No award given) |
| Logan West | 2023 | Macon County, Tennessee |
| Logan West | 2024 | Macon County, Tennessee |

# Howard L. Bruer Award (est. 1975)
# Recipients of the Tennessee Entomological Society
# (1975 – Present)

| Recipient | Year | Location |
|---|---|---|
| Whitney Eckler | 1975 | Memphis, Tennessee |
| Joe Martin | 1976 | Bolivar, Tennessee |
| Bryan Peters | 1977 | College Grover, Tennessee |
| Tidus Pollard | 1978 | Huron, Tennessee |
| John Bentley | 1979 | - |
| Melissa Hart | 1980 | Watertown, Tennessee |
| Gary Miller | 1981 | Knoxville, Tennessee |
| Harold Glass | 1982 | Knoxville, Tennessee |
| - | 1983 | (No award given) |
| - | 1984 | (No award given) |
| Penny Thompson | 1985 | Davidson County, Tennessee |

| Recipient (continued) | Year (continued) | Location (continued) |
|---|---|---|
| Matthew Fumich | 1986 | Munford, Tennessee |
| Christie Greer | 1987 | Greene County, Tennessee |
| Dottie Hodges | 1988 | Hamblen County, Tennessee |
| - | 1989 | (No award given) |
| Tim Gentry | 1990 | Woodbury, Tennessee |
| Jennifer Hartsell | 1991 | Hamblen County, Tennessee |
| Jessica Taylor | 1992 | Lincoln County, Tennessee |
| Jennifer Lenter | 1993 | Fayetteville County, Tennessee |
| Jeremy Smith | 1994 | Savannah County, Tennessee |
| George Carroll | 1995 | Anderson County, Tennessee |
| Stacy Milhahn | 1996 | Lincoln County, Tennessee |
| Nancy Warden | 1997 | Marshall County, Tennessee |
| Denise Byrum | 1998 | Moore County, Tennessee |
| James Johnson | 1999 | Bolivar, Tennessee |
| Wade Black | 2000 | Hardeman County, Tennessee |
| Sara List | 2006 | Coffee County, Tennessee |
| - | 2008 | (No award given) |
| Grant Fisher | 2009 | Sevierville, Tennessee |
| Julia Britto | 2012 | Oak Ridge, Tennessee |
| Swati Mishra | 2013 | Davidson County, Tennessee |
| - | 2014 | (No award given) |
| - | 2015 | (No award given) |
| - | 2016 | (No award given) |
| - | 2017 | (No award given) |
| - | 2018 | (No award given) |
| - | 2019 | (No award given) |
| - | 2020 | (No award given) |
| Braden Huneycutt | 2021 | Tennessee |
| - | 2022 | (No award given) |
| - | 2023 | (No award given) |
| - | 2024 | (No award given) |

# Outstanding Entomologist Award
# (Tennessee Entomologist of the Year) (est. 1981)
# Recipients of the Tennessee Entomological Society
# (1981 – Present)

| Recipient | Year | Affiliation |
|---|---|---|
| Myron Smith | 1981 | Hill Smith Pest Control |
| Harry Williams | 1985 | University of Tennessee |
| John. A. Hammett | 1987 | Tennessee Department of Agriculture |
| Joe C. Dunn | 1991 | American Cyanamid Company |

# Richard E. Caron Outstanding Entomologist Award
# Recipients of the Tennessee Entomological Society
# (1995 – Present)

| Recipient | Year | Affiliation |
|---|---|---|
| Harry Williams | 1995 | University of Tennessee (Retired) |
| Harvey Barton | 1996 | Arkansas State University (Retired) |
| Carroll Southards | 1997 | University of Tennessee (Retired) |
| Harold Bancroft | 2001 | University of Memphis |
| Charles Pless | 2002 | University of Tennessee (Retired) |
| Gary Lentz | 2008 | University of Tennessee (Retired) |
| Reid Gerhardt | 2009 | University of Tennessee (Retired) |
| Gene Burgess | 2011 | University of Tennessee (Retired) |
| Frank Hale | 2021 | University of Tennessee (Retired) |

# Undergraduate Student Paper Award (est. 2015)
# Recipients of the Tennessee Entomological Society
# (2015 – Present)

| Recipient | Year | Location |
|---|---|---|
| Erik Hearn (1st) | 2015 | University of Tennessee |
| Rachel Harmon (2nd) | 2015 | University of Tennessee |
| Amber Dunnaway (1st) | 2017 | Tennessee State University |
| Sandra Bojic (2nd) | 2017 | Belmont State University |
| Andrew Dixon (1st) | 2018 | University of Tennessee |
| Brianna Aldred (2nd) | 2018 | University of Tennessee |
| Caroline Barnes and Maya Rao (1st) | 2019 | University of Tennessee |
| Marlo Black | 2020 | University of Tennessee |
| Rachel Baxter | 2021 | University of Tennessee |
| Kathleen Coffman (1st) | 2022 | University of Tennessee |
| Gaige Lariscy (2nd) | 2022 | University of Tennessee |
| Molly Deinhart | 2023 | University of Tennessee |
| Wren Lawson (1st) | 2024 | Tennessee State University |
| Marin Hirata (2nd) | 2024 | Arkansas State University |

# Graduate Student Paper Award (est. 1986)
# Recipients of the Tennessee Entomological Society
# (1986 – 2020)

| Recipient | Year | Location |
|---|---|---|
| Jay Avery | 1986 | Knoxville, Tennessee |
| Laura Rodgers | 1987 | Knoxville, Tennessee |
| Jason Oliver | 1988 | Knoxville, Tennessee |
| Steve D. Powell | 1989 | Knoxville, Tennessee |
| Robert C. Brown | 1990 | Knoxville, Tennessee |
| Donald L. Sudbrink, Jr. | 1991 | Knoxville, Tennessee |
| Deborah Landau | 1992 | Knoxville, Tennessee |
| Deanna Colby | 1993 | Knoxville, Tennessee |
| Lee Holt | 1994 | Knoxville, Tennessee |
| Kenneth Copley | 1995 | Knoxville, Tennessee |
| Dina Roberts | 1996 | Memphis, Tennessee |
| Bryan Hed | 1997 | Knoxville, Tennessee |
| Gary Moughler | 1998 | Knoxville, Tennessee |
| Andrew Beld | 1999 | Nashville, Tennessee |
| Lacey McNally | 2000 | Baton Rouge, Louisiana |
| Ken Davenport | 2001 | Clarksville, Tennessee |
| Debra Hoyme | 2002 | Knoxville, Tennessee |
| Amy Kovach | 2003 | Knoxville, Tennessee |
| Andrew Haddow | 2004 | Knoxville, Tennessee |
| Greg Wiggins (1st) | 2005 | University of Tennessee |
| Issac Deal (2nd) | 2005 | University of Tennessee |
| Auora Teonnisson (1st) | 2006 | University of Tennessee |
| Derek Bailey (2nd) | 2006 | University of Tennessee |
| Eric Janson (1st) | 2007 | Vanderbilt University |
| Carla Dilling (2nd) | 2007 | University of Tennessee |
| Jonathan Willis (1st) | 2008 | University of Tennessee |
| Greg Wiggins (2nd) | 2008 | University of Tennessee |
| Robert Brucker (1st) | 2009 | Vanderbilt University |
| Paul Rhoades (2nd) | 2009 | University of Tennessee |
| Abdul Hakeem (1st) | 2010 | University of Tennessee |
| Keith Post (2nd) | 2010 | University of Tennessee |
| Carla Coots (1st) | 2011 | University of Tennessee |
| Angelina Fisher (2nd) | 2011 | Austin Peay State University |
| Abdul Hakeem (1st) | 2012 | University of Tennessee |
| Brittney Jones (2nd) | 2012 | Austin Peay State University |
| Elizabeth Benton (1st) | 2013 | University of Tennessee |
| Katheryne Benton (2nd) | 2013 | University of Tennessee |
| Elizabeth Benton (1st) | 2014 | University of Tennessee |
| Sara Mays (2nd) | 2014 | University of Tennessee |
| Elizabeth Benton (1st) | 2015 | University of Tennessee |

| Recipient (continued) | Year (continued) | Location (continued) |
|---|---|---|
| Kadie Britt (2nd) | 2015 | University of Tennessee |
| David Theuret (1st) | 2016 | University of Tennessee |
| Emel Oren (2nd) | 2016 | University of Tennessee |
| Brandy Schnettlet (2nd) | 2016 | Austin Peay State University |
| Katherin Solo (1st) | 2017 | University of Tennessee |
| WanWan Liang (2nd) | 2017 | University of Tennessee |
| Brent Newman (1st) | 2018 | Tennessee State University |
| Ratnasri Pothula (2nd) | 2018 | University of Tennessee |
| Victoria Deren (1st) | 2019 | Tennessee State University |
| Matthew Longmire (2nd) | 2019 | University of Tennessee |
| Swati Mishra (1st) | 2020 | University of Tennessee |
| Gary Edwards (2nd) | 2020 | University of Tennessee |

## Graduate M.S. Student Paper Award
## Recipients of the Tennessee Entomological Society
## (2021 – Present)

| Recipient | Year | Location |
|---|---|---|
| Kassie Hollabaugh (1st) | 2021 | University of Tennessee |
| Allyson Dekovich (2nd) | 2021 | University of Tennessee |
| Jackson Turner (1st) | 2022 | University of Tennessee |
| Asmita Gautam (2nd) | 2022 | Tennessee State University |
| Wesley Rhinehart (1st) | 2023 | University of Memphis |
| Mitchell Adkins (2nd) | 2023 | University of Memphis |
| Wesley Rhinehart (1st) | 2024 | University of Memphis |
| Becca Lent (2nd) | 2024 | Arkansas State University |

## Graduate Ph.D. Student Paper Award
## Recipients of the Tennessee Entomological Society
## (2021 – Present)

| Recipient | Year | Location |
|---|---|---|
| Swati Mishra (1st) | 2021 | University of Tennessee |
| Matthew Longmire (2nd) | 2021 | University of Tennessee |
| Kassie Hollabaugh (1st) | 2022 | University of Tennessee |
| Dawson Kerns (2nd) | 2022 | University of Tennessee |
| Julian Cosner (1st) | 2023 | University of Tennessee |
| Matthew Longmire (2nd) | 2023 | University of Tennessee |
| Nathan Arey (1st) | 2024 | University of Tennessee |
| Allyson Dekovich (2nd) | 2024 | University of Tennessee |

# CONSTITUTION

# of the

# TENNESSEE ENTOMOLOGICAL SOCIETY

# (as of October 2023)

## Article 1. Name

This Society is formed in the name and style of the "Tennessee Entomological Society", as an educational institution, not contemplating financial gain or profit. It is herein and after called the Society.

## Article 2. Purpose

The purpose and object of the Society is to foster entomological accomplishment among its members and to promote the welfare of all of the State of Tennessee through the encouragement of: (1) the preparation, reading, and/or publication of papers, (2) association and free discussion among all members, (3) the dissemination of entomological information to the general public, and (4) cooperative efforts in statewide insect surveys or other projects.

## Article 3. Membership

**Section 1. Membership:** Membership shall be open to all people interested in Entomology.

**Section 2. Sustaining Membership:** Sustaining Membership is open to commercial or industrial organizations upon meeting approval and requirements of the Board of Directors.

**Section 3. Honorary Membership:** Honorary Members may be nominated by a majority vote of the Board of Directors and approved by a majority vote of the membership.

**Section 4. Student Membership:** Student Membership is open to students enrolled in any educational institution and meeting the requirements of the Board of Directors.

**Section 5. Procedure to Obtain Membership:** Any person desiring to become a member of the Society shall do so by application and payment of dues to the Secretary/Treasurer.

**Section 6. Members in Good Standing:** A member in good standing is one who is current in payment of dues and conforms to the ethics policy of the Entomological Society of America.

## Article 4. Membership Rights

**Section 1. Voting:** Each member in good standing shall be entitled to one vote in-person or by electronic ballot. Voting by proxy shall not be allowed.

**Section 2. Privileges:** All members in good standing shall have equal privileges in the presentation of papers and discussions at meetings and other member activities of the Society.

## Article 5. Membership Certification

**Section 1. Certification:** The Board of Directors shall decide what evidence of membership each member in good standing shall be entitled to receive.

**Section 2. Transfer:** Evidence of membership in the Society will not be transferable or assignable.

## Article 6. Dues

**Section 1. Annual Dues:** The amount of annual dues for membership in the Society will be established by the Board of Directors. The use or uses of dues collected shall also be determined by the Board.

**Section 2. Time of Payment:** The Board of Directors shall set such times during each year as it deems advisable for the payment of annual dues by members. Generally, annual dues shall be paid during registration at annual meetings. However, a member may send dues to the Secretary/Treasurer of the Society if the member cannot attend a given annual meeting.

**Section 3. Honorary Members:** There shall be no dues required for Honorary Members or others specially designated by the Board of Directors.

## Article 7. Meetings of the Society

**Section 1. Annual Meetings:** The Society shall hold annual meetings at such times and places as may be designated by the Board of Directors and specified in the notice thereof, for the election of officers and any other business as may be brought before the meeting. As determined by the Board of Directors, annual meetings may be virtual rather than in-person if deemed necessary.

**Section 2. Registration Fee:** A registration fee, in the amount to be determined by the Board of Directors, shall be paid by all members and non-members who attend each annual meeting. The Board of Directors will determine the use of these fees.

**Section 3. Special Meetings:** Special meetings of the Society shall be held at any time and place as specified in the notice thereof, whenever called by the President or any two (2) or more

members of the Board of Directors. Special meetings may be virtual rather than in-person if deemed necessary by the Board of Directors.

**Section 4. Notice:** Notice of all meetings of the Society, annual or special, stating time, place, and agenda shall be shared with each member by the President, Secretary/Treasurer, or Directors calling the meeting not less than seven (7) days prior to the meeting. The same notification period shall be required if the meeting is virtual rather than in-person.

## Article 8. Officers

**Section 1. Officers:** The officers of the Society shall consist of a President, President-elect, Secretary/Treasurer, Editor, and Historian, all of whom, except the President, shall be elected by and from the membership by a simple majority vote of members. Elections require a minimum quorum of Board of Directors (for filling Board vacancies) or general members (for annual Board elections) (see Article 10, Section 2). The President-elect shall automatically accede to the office of President at each annual meeting, or when the President is unable or unwilling to act for any reason. Nominees for each elective office of the Society shall be selected by a nominating committee appointed at the annual meeting by the President. Nominations also may be presented from the floor. The President and President-elect shall hold office from the date of election at the annual meeting until the election of their successors at the next annual meeting and shall not be eligible for re-election to the same office for a successive term. The Secretary/Treasurer and Editor shall hold office from the date of election at the annual meeting until the election of a successor at the third following annual meeting and shall be eligible for re-election. The Historian shall hold office from the date of election at the annual meeting until the election of a successor at the fifth following annual meeting and shall be eligible for re-election. No member shall occupy more than one office at any one time.

**Section 2. Duties and Powers of the President:** The President shall be the Chief Executive Officer of the Society and shall preside at all meetings of the Society and the Board of Directors, have and exercise general and active management of the Society, execute and enforce all orders, resolutions and regulations duly adopted by the Board of Directors, and perform such other duties as assigned by the Board of Directors.

**Section 3. Duties and Powers of the President-elect:** In the absence of the President, or in the case of failure to act, the President-elect shall have all the powers of the President and shall perform such other duties as shall be imposed by the Board of Directors. The President-elect shall act as the Program Chair for the annual meeting.

**Section 4. Duties and Powers of the Secretary/Treasurer:** The Secretary/Treasurer shall attend and keep the minutes of all meetings of the Board of Directors and the Society, shall have charge of the records of the Society. The Secretary/Treasurer shall keep full and accurate accounts of the books of the Society and ensure the Society submits required reports to State and Federal

agencies. The Secretary/Treasurer shall deposit all monies and valuable properties and effects in the name of and to the credit of the Society in such depository or depositories as may be designated by the Board of Directors. The Secretary/Treasurer shall execute all contracts with approval by the President in the name of the Society and disperse funds as may be ordered by the Board, getting proper receipts for such disbursements. The Secretary/Treasurer shall render to the Board of Directors, whenever required by it, an accounting of all transactions. During each annual meeting, the Secretary/Treasurer shall give a report on the annual financial condition of the Society and meet with the Auditing Committee. The Secretary/Treasurer shall, in general, perform all the duties incident to the office of Secretary/Treasurer of the Society.

**Section 5. Duties and Powers of the Editor:** The Editor shall be Chair of the Publication and Editorial Committee and be responsible for editing and publishing such publications as directed by the Board of Directors.

**Section 6. Duties and Powers of the Historian:** The Historian shall maintain and be responsible for keeping a complete and accurate history of the activities of the Society. The Historian shall work with the Publicity Committee and Editor to document the activities of the Society.

**Section 7. Vacancies in Office:** Any vacancy in the office of President-elect, Secretary/Treasurer, Editor, or Historian may be filled by a majority vote of the remaining Directors. Should an office be filled by vote of the Board of Directors, the person so elected shall not become the officer upon the next annual meeting unless elected as such by the Society according to the procedures set forth for the election of officers of the Society (Article 8, Section 1).

## Article 9. Board of Directors

**Section 1. Makeup and Responsibilities:** The Board of Directors shall consist of the immediate Past-president, President, President-elect, Secretary/Treasurer, Editor, and Historian of the Society and two Members-at-Large. The Members-at-Large shall be elected at the Annual Meeting of the Society and shall serve a term of two years with staggered appointments. Any three (3) Directors shall constitute a quorum for the transaction of business (see Article 10, Section 2). All properties, property rights, objects and purposes of the Society shall be managed, promoted, and regulated generally by the Board of Directors.

**Section 2. Installation and Term of Office:** The members of the Board of Directors shall be installed after their election as officers of the Society, as set forth in Article 8, Section 1, at the annual meeting of the Society or at any special meeting called for that purpose. All installed Directors shall serve for a term corresponding to that of the office in the Society to which each was elected by the members and thereafter until their successors are elected, accept office, and are installed.

**Section 3. Annual Meetings:** The Board of Directors shall meet immediately after the adjournment of the annual meeting for the transaction of such business as may come before the Board. No notice of such a meeting shall be required. Should a quorum of the newly elected Directors fail to be present, those present may adjourn without further notice to a specified future time.

**Section 4. Other Meetings:** The Board of Directors shall not be required by this Constitution to hold regular meetings but may, by resolution or otherwise, establish such order of meetings as it deems desirable. Special meetings of the Board shall be held at any time or location, in-person or virtual, as may be specified in the notice thereof, whenever called by the President or any two (2) or more Directors.

**Section 5. Meeting Notices:** Notice of all meetings of the Board of Directors, other than the annual meeting, starting time, place, and agenda for which, the meeting was called, shall be given to each Director by the President or Directors calling the meeting not less than three (3) days prior to the meeting.

## Article 10. Miscellaneous Provisions

**Section 1.** All financial transactions shall be approved by the Board of Directors in such manner as they determine.

**Section 2.** At all duly constituted meetings of the Society or Board of Directors of the Society, 10% of the eligible members, or 3 Directors, respectively, present shall constitute a quorum for the transaction of any business presented at such meetings.

**Section 3. General Prohibitions:** Notwithstanding any provision of this Constitution and By-Laws which might be susceptible to a contrary construction.

A. No part of the activities of the Society shall consist of carrying on propaganda, or otherwise attempting to influence legislation.

B. This Society shall not participate in, or intervene in, including the publishing or distribution of statements, any political campaign on behalf of a candidate for public office.

## Article 11. Amendments

**Section 1.** This Constitution may be altered or amended, or By-Laws adopted by a simple majority vote of the quorum (see Article 10, Section 2) present at any annual or special meetings of the Society membership, if notice of such proposed amendment or By-Laws is given to the membership prior to the meeting.

# OPERATING PROCEDURES OF THE TENNESSEE ENTOMOLOGICAL SOCIETY

The Tennessee Entomological Society (TES) is an organization formed for the purpose of fostering entomological accomplishment among its members and to promote the welfare of all of the State of Tennessee through the encouragement of: (1) the preparation, reading, and/or publication of papers, (2) association and free discussion among all members, (3) the dissemination of entomological information to the general public, and (4) cooperative efforts in statewide insect surveys. All necessary permanent records are maintained by person or persons designated by the Board of Directors and the President of the Organization.

## Changes in Operating Procedures

The Constitution or By-laws may be altered or amended by a majority vote of the quorum present at any annual or special meeting of the Society membership, provided that notice of such proposed amendment or By-laws shall have been given to the membership prior to the meeting; the operating procedures of TES should be more flexible. The Constitution and Operating Procedures Committee is charged with the responsibility of studying these procedures each year to recommend possible improvements. Proposed changes in procedures are recommended to the Board of Directors for final action.

## Registration and Dues

Registration and dues shall be set by majority vote of the Board of Directors. Dues for voting members will be collected by the membership committee at the time of the annual meeting.

## The Board of Directors

The Board of Directors shall:

1. Consist of the immediate past-President, the President, President-Elect, Secretary, Treasurer, Editor, and Historian of the Society and two members-at-large.

2. Be responsible for management of the TES and Conduent the affairs of the organization.

3. Conduct such business of the organization as is not delegated to the officers or committees and receive from the officers and committees reports and recommendations requiring specific board action or requiring recommendation for action by the membership.

4. Be responsible for changes in the manual of operating procedures after study and recommendation by the Constitution and Operating Procedures Committee.

5. Be responsible for transacting any official business.

6. Be responsible for assembling the board meetings.

7. Nominate honorary members to be voted on by membership.

## President

The President shall:

1. Serve as Chairman of the Board of Directors, prepare an agenda for meetings of the Board of Directors and preside at such meetings.

2. Be responsible for determining that the decisions of the Board of Directors are correctly enforced within the framework of the organization's Constitution and By-laws.

3. Select chairman of committees at annua meeting and appoint committee members.

4. Serve as ex-officio member of all committees, maintain close liaison with the chairman of the committees, and encourage and assist them with development of program beneficial to the organization.

5. Work with the chairman of the program and local arrangement committees in planning the programs for annual meetings.

6. Preside at the general or introductory session of the annual meeting.

7. Advise all officers and board members on significant activities of the organization and solicit their suggestions.

8. Serve as the official representative for TES, when appropriate.

## President-Elect

The President-Elect shall:

1. Perform the duties of the President if he cannot serve.

2. Serve as chairman of the program committee, and select the membership of that committee with the President and Board of Directors' approval.

3. Work with the Local Arrangements Chairman in the planning of all details of the annual meeting.

4. Prepare and mail announcements of the annual meeting. Assist with the printing of programs and mailing of programs.

5. Prepare and have the program of the annual meeting in print.

6. Be responsible for reminding speakers at each annual meeting to prepare papers before the meeting according to prescribed standards of the organization and to have these papers at the time of the presentation.

## Secretary

The Secretary shall:

1. Have charge of the records and seal of the TES.

2. Take minutes of all official business meetings of the association. Supply a copy of these minutes to the membership, Board of Directors and committee chairmen as necessary.

3. Consult with the President and inform all officers and board members of occurrences of any official meetings of the Board of Directors.

4. Maintain current lists of members and provide these along with the minutes of the annual business meeting to those persons with official need to know.

5. Make any mailing to the membership as needed or designated by the President or Board of Directors. Maintain a supply of the organizational supplies and letterhead paper for use by the officers.

6. Maintain a supply of the operating procedures and provide copies to officers and board members and committee chairmen.

7. Serve as a member of the membership committee.

## Editor

The Editor shall:

1. Chair the Publication and Editorial Committee.

2. Perform or be responsible for all editorial duties of the organization including the newsletter and any other publication of the organization.

## Treasurer

The Treasurer shall:

1. Be responsible for the financial affairs of the TES. This includes depositing all money received by the TES into appropriate Association accounts, handling the TES's money for maximum income (upon consultation with the Finance Committee), and paying of all expenses and invoices received by the TES.

2. Serve as a member of the Finance Committee.

3. Provide a written financial report to the Board of Directors at least annually, and for the published business meeting minutes. Make an oral financial report as the annual business meeting and at Board of Director meetings as necessary. Provide the necessary information for the Auditing Committee's activities.

## Immediate Past-President

The Immediate Past-President shall:

1. Serve as a member of the Board of Directors during the year following his term of Presidency.

## Committees

All committees and members of committees are selected by the President (or President-Elect). Each committee shall attempt to complete his/her assigned duties during the term of their appointment. The chairman of each committee shall solicit the assistance of his/her members as necessary. The standing committees are as follows:

## Program Committee

The Program Committee shall:

1. Plan the general program format to fit the annual meeting time established by the general membership.

2. Contact invitational speakers and make arrangements for an honorarium, if appropriate.

3. Request papers from the general membership and establish a deadline for submittal of titles.

4. Prepare a program outline for printing.

5. Arrange to have chairpersons for each session.

6. Compile abstracts from program speakers for the proceedings program.

## Local Arrangements Committee

The Local Arrangements Committee shall:

1. Be responsible for all physical arrangements for the Annual Meeting, working cooperatively with the Officers.

2. Reserve meeting rooms for estimated attendance at the Annual Meeting.

3. Specific Responsibilities will include:

    a. Arranging for visual and audio equipment, including projectors.

    b. Liaison with Treasurer regarding registration help, convention typewriters, etc.

    c. Signs for sessions and activities; coordinate with Program Chairman.

    d. Helping arrange transportation or lodging of guest speakers if needed; coordinate with Program Chairman

    e. Preparing a report of activities for inclusion in the minutes of the business meeting.

    f. Approving all expenses incurred in conjunction with the Annual Meeting and forwarding invoices to the Treasurer for payment.

4. In addition to the above, be responsible for special functions carried out in conjunction with the Annual Meeting. This may include such special activities as coordinating exhibits at the Annual Meeting, as well as door prizes, with representatives of other organizations joining in this meeting, if desired. If necessary, the Local Arrangements Committee will be appointed with a sufficient number of

members that these functions may be designed as the responsibilities of sub-committees of the overall committee.

5. Insure that sufficient facilities are available for morning and afternoon breaks.

6. A sponsored or dutch banquet and/or mixer could also be in order. Arrangements for banquet facilities, and after-dinner speaker and door prizes may be desired.

## Membership Committee

The Membership Committee shall:

1. Encourage any interested person in Entomology to join our Society.

2. Send information about the Society to heads of Biology ad Zoology Departments at all colleges and Universities in the state, enclosing a few applications.

3. Encourage interested people of Pest Control organizations and other agricultural businesses to join the Society.

4. The Secretary shall send at least two blank membership applications to each member asking them to give to good prospects.

5. Each committee member should make a conscientious effort to enroll as many new members during the year as possible.

6. When notices of annual meetings are sent to major newspapers, television, and radio stations, an invitation to interested people could be given at that time.

7. The Chairman should coordinate this committee's efforts with the publicity and other committees when appropriate.

8. Collect dues at the annual meeting.

## Auditing Committee

The Auditing Committee shall:

1. Review and certify the accuracy of the financial records and books of the Treasurer prior to the general business sessions of each Annual Meeting.

2. Conduct special audits as may be directed by the President or the Board of Directors.

3. Report any mistakes or misuses found by the committee to the President for appropriate action prior to the genera business session.

4. Prepare a report of the committee's findings, with recommendations, for presentation at the general business session.

## Nominating Committee

The Nominating Committee shall:

1. Present a slate of nominees from the active membership of the TES which will include a nominee for President-Elect, and two nominees for members-at-large on the Board of Directors every year. The Secretary, Editor, and Treasurer hold office for three years, and shall be eligible for re-election. In each case, it is suggested that the Nominating Committee present more than one nominee for each position.

2. Secure the prior approval of all nominees before their names are put before the membership.

3. Submit a written report to the Board of Directors consisting of current committee actions and suggestions for improvement.

## Awards Committee

The Awards Committee shall:

1. Consist of 5-6 TES members including a Chair, who are selected following the business meeting of the annual meeting.

2. Obtain name(s) of state 4-H winner (level II), the entomology winner of the Mid-South Fair (Tennessee resident), or other outstanding young entomologist(s) and select the Howard Bruer Award recipient. 1/

3. Arrange to have a plaque made honoring the Howard Bruer Award recipient (contact TES treasurer) and deliver the plaque and news released information to the recipient's county agent for presentation/publicity at a later date. 2/

4. Obtain commitments from 3-5 TES members to serve as judges of the Student Paper Competition at the upcoming annual meeting (It is preferable that none of the judges have students in the competition).

5. Contact the TES Treasurer about preparing a $150.00 and $75.00 check to be given to the Student Paper Competition 1st and 2nd place winners during the business meeting of the annual meeting.

6. Have Student Paper Competition Evaluation Forms (with student names and presentation titles) ready for the judges the morning before the competition and assist in determining the winner following the competition.

7. Arrange to have a plaque made honoring the outgoing TES President (contact the TES Treasurer) and present it to him/her when asked by the new President during the business meeting of the annual meeting. 2/

8. Determine if it is appropriate to award the Richard E. Carn Outstanding Entomologist Award to a TES member at the upcoming annual meeting and submit for review by the Board of Directors. This award will be given periodically to individuals who have distinguished themselves by making outstanding contributions to entomology in Tennessee during their career. If a recipient is chosen, arrangements should be made to have a plaque made (contact the TES Treasurer) to be presented at the business meeting. 2/

9. Have a committee meeting immediately following the second paper session at the annual meeting.

1/ Contact Award Committee Chair at least one month prior to the annual meeting.

2/ Contact Award Committee Chair and President about having plaques made at least one month before the annual meeting.

## Prediction, Evaluation Committee

The Prediction and Evaluation Committee shall:

1. List major agricultural commodities in Tennessee (Plant & Animal).
    a. Approximate percent commodity loss due to various insect pests.
    b. Approximate monetary loss due to each pest on various crops.
    c. Approximate cost of control for each pest.
2. List insects which face a serious threat and crops which may be affected.
3. Major household, structural, and nuisance insects.
    a. List major insects.

b. Approximate amount of money spent each year in control.

c. Approximate damage and loss from pest.

## Constitution and Operating Procedures Committee

The Constitution and Operating Procedures Committee shall:

1. Annually review the Constitution and Operating Procedures and develop recommendations for improvements or needed changes and submit these to the Board of Directors for study and approval.

2. The Chairman of the Constitution Committee shall prepare adoption of amendments at any annual or special meeting.

3. The Chairman of the Constitution Committee shall coordinate with the Secretary in inserting such amendments into the notice and proceedings of the meeting.

## Publication and Editorial Committee

The Publication and Editorial Committee shall:

1. Determine and make recommendations to the Society of the type of publication suitable to the Society's needs and when such a publication should be initiated.

2. Set up guidelines and standards for such a publication, and investigate possible mechanisms for implementation upon decision of the organization.

3. Be responsible for soliciting and gathering of articles for publication.

4. Act as an editorial committee in screening such activities to be published.

5. The chairman will be responsible for the coordination of this committee's responsibilities with the Board, Secretary-Treasurer, and other committees as necessary.

## Publicity Committee

The Publicity Committee shall:

1. Be responsible for developing and implementing an effective public relations program for the Tennessee Entomological Society.

2. Prepare general news releases on the Society's activities and accomplishments and publicize the meetings. Specifically, these things should be done:

    a. Prepare and release general news release as soon as the Program Committee has planned a there or area of interest for either meeting. Also, include location of meeting and time. This should begin by mid-summer and meeting dates should be sent to magazines and trade publications such as Delta Farm Press, Southeast Farm Press, Tennessee Market Bulletin, Ag Pesticide Notes, newspapers, etc.

    b. A follow-up news release should be issued about one month before each meeting. Location of meeting, date, time, and outstanding invitational speakers could be mentioned.

    c. Prepare follow-up news release after the meeting for use by news media.

    d. Send notice to Entomological Society of America and other state societies.

3. Mountain close liaison with the Program Committee in obtaining early copies of the program of both meetings for publicity purposes.

4. Arrange for radio, television, and press coverage of Society's meetings by contacting local radio and TV stations just prior to the meetings and by calling the news rooms of local newspapers on the first day of the meetings.

5. Arrange for group photos of outgoing and in-coming officers and directors of the Association at the Annual Meeting.

6. Prepare a report of the year's activities for the committee for presentation at the annual business meeting.

7. Post notices on the bulletin boards of the Entomology, Biology, and Zoology Departments in the colleges and universities across the state.

8. Direct mail to members.

Dates ('00), ('01) refer to last meeting attendance or late dues payment.

H = Honorary Member

# Application for Membership in the

# TENNESSEE ENTOMOLOGICAL SOCIETY

**I (we), herewith, submit this application for membership in the Tennessee Entomological Society.**

PLEASE CHECK HERE IF YOU ARE A NEW MEMBER: _____

NAME: _____

ADDRESS: _____

_____

_____

_____ ZIP _____

PHONE: _____

E-MAIL: _____

AFFILIATION: _____

REGISTRATION: $30.00 _____ STUDENT DUES: $10.00 _____

REGULAR DUES: $20.00 _____ DONATION: _____

CORPORATE DUES: $50.00 _____ SUSTAINING DUES: $50.00 _____

TOTAL: $_____ Received by: _____
(Treasurer)

**Please Remit to:**

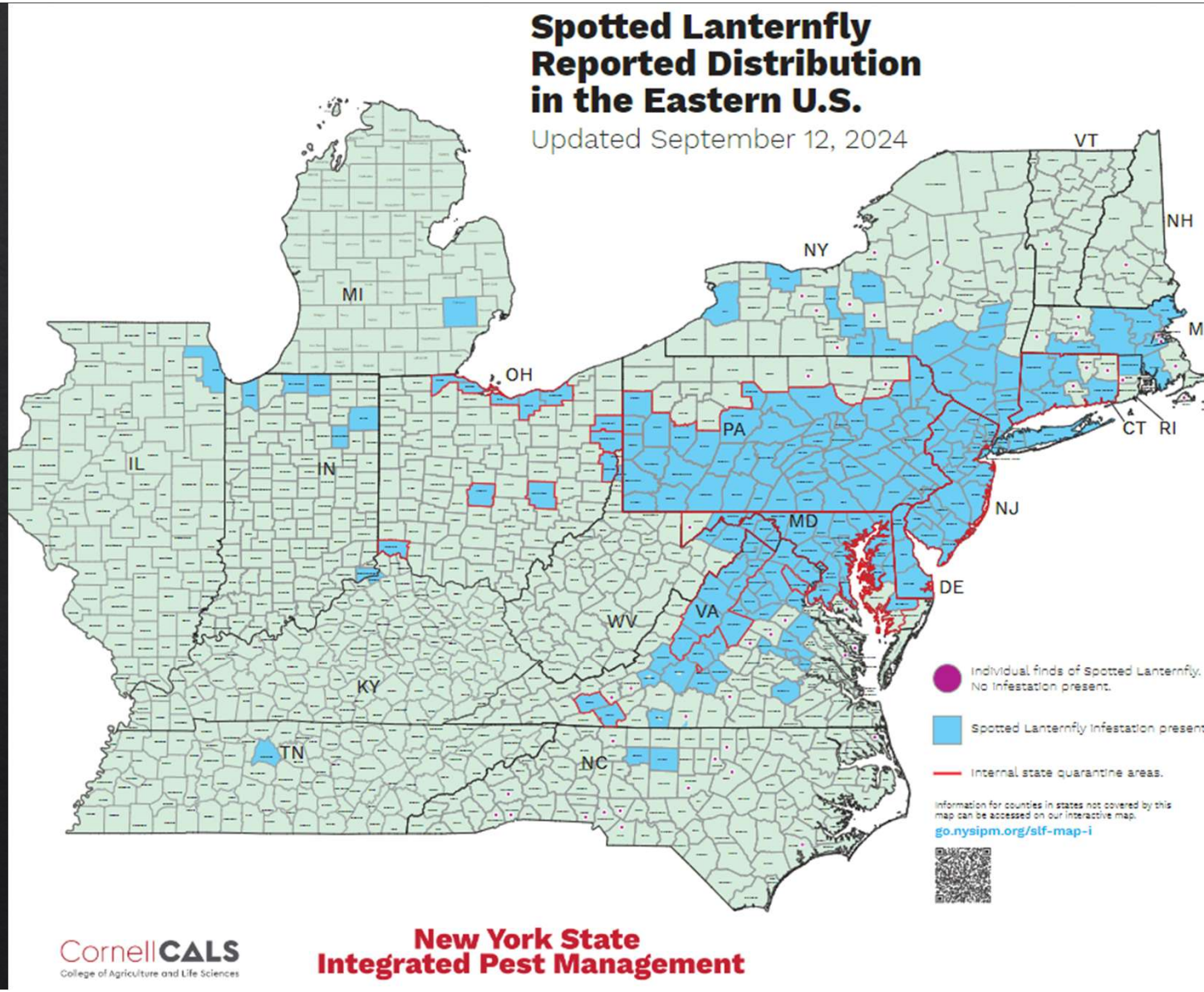
**Karla Addesso**
**kaddesso@tnstate.edu**

**All checks should be made payable to the Tennessee Entomological Society.**

# TES Predictions and Evaluations 2024

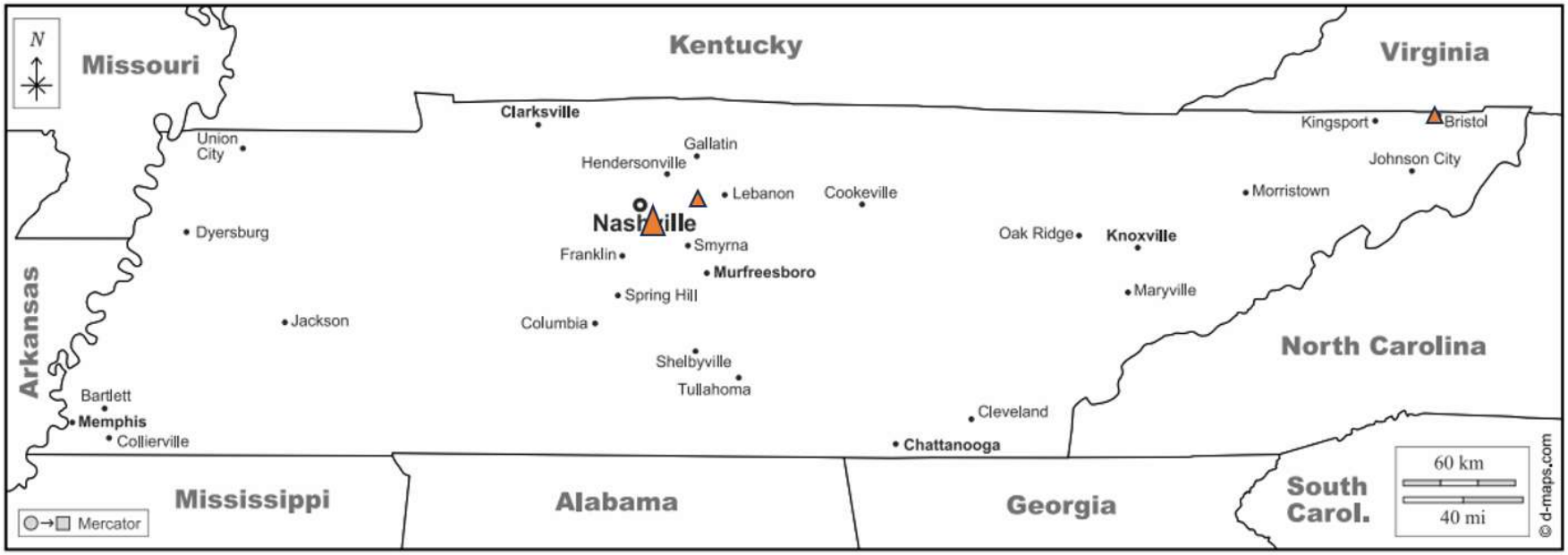
**Cindy Bilbrey**
Tennessee Department of Agriculture, Nashville, TN

Spotted Lanternfly has been confirmed in Bristol, TN in 2024



# Spotted Lanternfly

- 2 Adults found in Wilson Co. October 31, 2023
- First Egg Hatch observed April 3, 2024
- SLF Egg Masses found in Bristol, TN April 10, 2024



# 2024 Imported Fire Ant Quarantine

**Effective January 1, 2024**

# Southern Pine Beetle

- SPB traps in Chester, Rhea, Marion, Wayne counties
  - 664 beetles trapped
  - 1,278 clerids (SPB predators)
- Aerial Surveillance
  - 100,000 acres surveyed

| Insect | Rhea | Marion | Wayne | Chester |
|---|---|---|---|---|
| Clerid | 24 | 11 | N/A | 1243 |
| SPB | 23 | 161 | 188 | 292 |

# Hemlock Woolly Adelgid

- **HWA- New Record (2023-2024)**
  - 1,808 acres treated
  - 18,237 trees treated

- 16 Hemlock Conservation Areas Treated

- Plans underway to establish TN insectaries for biological control *Laricobius osakensis.* Collection trip planned for later this year.

# Spongy Moth- TDA

**66 spongy moths for the state**
**4904 Traps Placed**

- STS (Slow the Spread)
  - Johnson Co. is the hot spot- 35 moths
  - Cater Co. – 3
  - Wahington- 0
  - Unicoi – 1
  - Sullivan – 3

- APHIS Detection, High Risk and Delimiting Traps
  - Greene- 1
  - Hawkins – 4
  - Knox- 11 (campground)
  - Montgomery – 1 (campground)
  - Sevier – 4
  - Wilson – 3 (campground)

# Asian Defoliator Survey

**TDA- Plant Certification,**
**East Tennessee State University,**
**And University of Tennessee,**
**Martin**

Dendrolimus pini
Dendrolimus sibiricus
Dendrolimus punctatus
Lymantria albescens
Lymantria dispar asiatica
Lymantria dispar japonica
Lymantria postalba
Lymantria umbrosa
Lymantria mathura
Lymantria monacha
Lymantria xylina

**Figure 2.** Milk carton trap. (Image courtesy of William A. Carothers).

**Figure 3.** Paper delta trap. (Image courtesy of Lee Spaulding, USDA-APHIS-PPQ).

**Figure 4.** Wing trap. (Image courtesy of Lee Spaulding, USDA-APHIS-PPQ.)

USDA Animal and Plant Health Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

Plant Protection and Quarantine

# Pest Alert

## Cotton Seed Bug *(Oxycarenus hyalinipennis)*

The cotton seed bug is a pest of cotton and other plants in the Malvaceae family, including hibiscus, kenaf, okra, and roselle. It causes economic damage, particularly when it feeds on cotton seeds, reducing seed weight, germination, and oil content. Additional losses may occur if the cotton seed bugs are crushed during ginning because they can stain the cotton lint and lower its quality.

The cotton seed bug is found in countries worldwide, except for most of North America. Present in the West Indies since the early 1990s, the pest's first U.S. detection occurred in Puerto Rico in January 2010. Later that year, the cotton seed bug appeared in the Florida Keys and U.S. Virgin Islands. The population in the Florida Keys was successfully eradicated by 2014. Since 2019, detections have occurred in urban and residential landscapes in several counties in southern California.

The U.S. Department of Agriculture (USDA) is working closely with stakeholders to survey for the cotton seed bug as part of national early detection and delimiting efforts.

*Adult cotton seed bug, USDA photo by Julieta Brambila.*

*Adult cotton seed bug resting on a person's thumb (left), photo courtesy of California Department of Food and Agriculture. Life stages on cotton boll (right), USDA photo by Karolynne Griffiths.*

https://www.aphis.usda.gov/sites/default/files/alert-cotton-seed-bug.pdf

# Box Tree Moth

*Last Modified: September 12, 2024*

Box tree moth is an invasive pest that can significantly damage and potentially kill boxwood (*Buxus* species) plants if left unchecked. The caterpillars are ravenous feeders, and heavy infestations can completely defoliate host plants. After the leaves are gone, they feed on the bark which eventually kills the plant. Boxwoods are a popular ornamental evergreen shrub common to many landscape environments in the United States.

The moth is native to East Asia and has become a prolific pest in Europe. In 2021, APHIS confirmed box tree moth in New York, and since then it has been confirmed in Massachusetts, Michigan, Ohio, Delaware, and Pennsylvania.

https://www.aphis.usda.gov/plant-pests-diseases/box-tree-moth

# Yellow-Legged Hornet

In August 2023, the Georgia Department of Agriculture (GDA), in coordination with the United States Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS) and the University of Georgia, confirmed the presence of a yellow-legged hornet (YLH; *Vespa velutina*) near Savannah, Ga. This is the first time a live specimen of this species has been detected in the open United States.

The yellow-legged hornet poses a threat to honeybees and other pollinators in our state. These pollinators play a significant role in Georgia's agriculture industry, the state's main economic driver, and it is imperative that these invasive pests are tracked and eradicated. We are working with USDA APHIS and UGA to trap, track, and eradicate these pests and will continue to assess the situation as new information becomes available and allocate additional resources as need.

The public plays an important role, and we are asking Georgians to report sightings of the yellow-legged hornet using this online reporting form. We urge the public to be cautious in the event they come across a suspected yellow-legged hornet. If you can safely take a photo of the suspected yellow-legged hornet, we encourage you to do so to assist us with identification.

**REPORT A YELLOW-LEGGED HORNET SIGHTING**

a photo of the suspected yellow-legged hornet, we encourage you to do so to assist us with identification.

**REPORT A YELLOW-LEGGED HORNET SIGHTING**

https://agr.georgia.gov/yellow-legged-hornet

GDA
GEORGIA DEPARTMENT OF AGRICULTURE

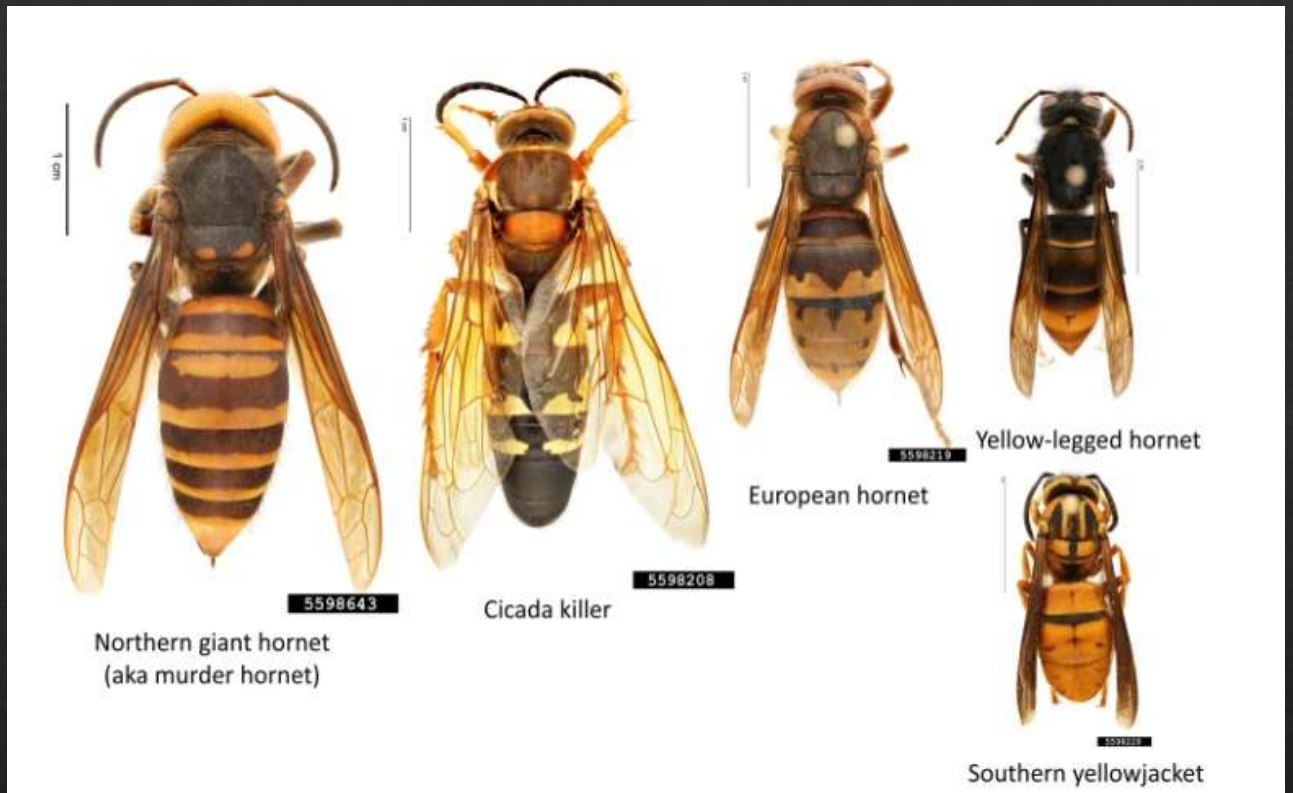



***Figure 1:*** *A comparison of hornets and wasps with 1 cm lines for differentiation. Yellow-legged hornet is smaller than other big wasps you might see in Kentucky, such as the European hornet. They are similar in size to yellowjacket queens but usually are darker in color (Photo: from Bugwood.org).*

https://kentuckypestnews.wordpress.com/2023/08/22/invasive-hornets-gone-down-to-georgia/