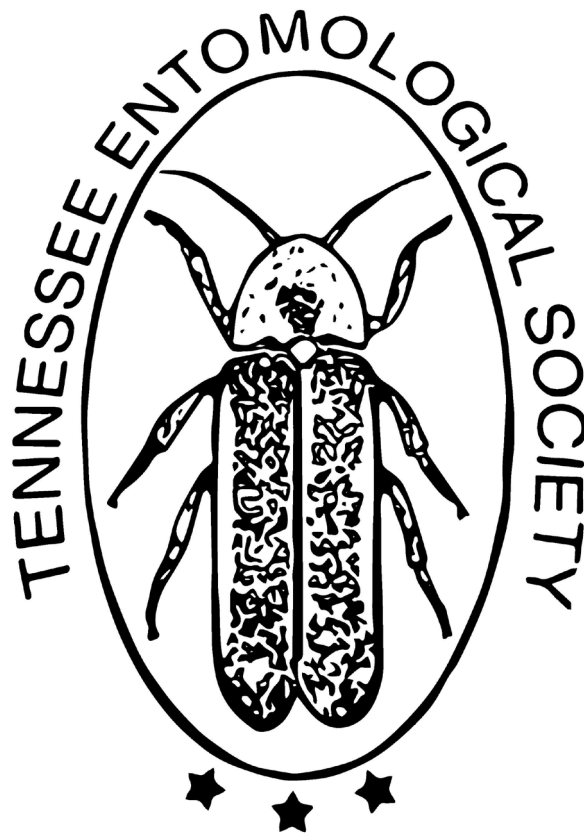


# ***THE FIREFLY***

**Proceedings of the 46th Annual Meeting  
of the  
Tennessee Entomological Society**



**October 17-18, 2019**

**Agricultural Research & Education Center  
1675 Ed Temple Boulevard  
Tennessee State University  
Nashville, Tennessee**

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**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**

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**Name of Nominator** \_\_\_\_\_

**Phone Number of Nominee: Area Code (    )** \_\_\_\_\_

Please submit your nomination by **August 1, 2020** 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 46th  
ANNUAL MEETING  
OCTOBER 17-18, 2019**

## **Keynote Address**

### **Building plant-pollinator communities**

**Laura Russo**

Assistant Professor, Pollinator Ecologist, Department of Entomology and Plant Pathology,  
University of Tennessee, Knoxville

We depend on insect pollinators for many of the nutritious foods we eat, yet the very agricultural systems which depend on insect pollination may also be threatening the survival of these valuable animals. As agriculture increases in extent and intensity, what are the best ways to mitigate impact and protect our pollinators, while also ensuring a sustainable economic gain for farmers? For example, we found that a diverse and abundant community of wild bees was able to provide sufficient pollination services in New York orchards with eco-friendly management; these farmers could save money by reducing hive rental, while also promoting more ecologically sustainable management practices. It is also important to understand the ways in which we can support these communities of wild pollinators by exploring the resources they use in agroecosystems (including weedy plant species), and by developing techniques to manage the community as a whole, rather than individual species. We show ways to identify important floral resources for wild bees by identifying pollen they carry, ranking native perennials, exploring their use of weedy habitat fragments, and quantifying floral traits that correlate with bee preferences. Finally, we use complementary theoretical and empirical methods to explore how these communities of plants and pollinators form, how they respond to perturbations, and how they can be managed.

## **Student Presentations: Undergraduate**

### **From county to local: Investigating *Aedes* egg populations at a local scale (First Place-Undergraduate Student Award)**

**C.M. Barnes, M.R. Rao, R.D. Rowe, D.J. Paulsen and R.T. Trout Fryxell,**  
Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN.

La Crosse virus (LACV), transmitted via the bite of infected *Aedes triseriatus*, *Ae. albopictus*, and *Ae. japonicus* mosquitoes is the leading cause of arboviral encephalitis in children. We looked at the spatial and temporal distribution of *Aedes* eggs at various sites over a timespan of eleven weeks. We found the sites using previous research conducted by past members of our team, Devin Rowe and Drew Dixon. We hypothesized that there would be more *Aedes* eggs in cemeteries and that moderate to low temperatures with little precipitation would also lead to a greater amount of *Aedes* eggs per week. Our methods for ovitrapping included us putting black cups (with a paper for collecting *Aedes* eggs) in liver powder infused water at parks and cemeteries around Knoxville. We then counted these *Aedes* eggs and raised them in a separate facility. Looking at our data, we found that there were more *Aedes* eggs in cemeteries compared to parks and that temperatures around 75 degrees Fahrenheit with little precipitation also had more *Aedes* eggs.

## **Student Presentations: Graduate**

### **Application of microbial pesticides changes mite behavior (First Place-Graduate Student Award)**

**Victoria Deren**, Fulya Baysal-Gurel and Karla Addesso  
Agricultural and Environmental Sciences, Otis L. Floyd Nursery Research Center, Tennessee State  
University, McMinnville, TN

*Tetranychus urticae* (Koch) is a generalist herbivore common in greenhouse production. In this environment, spider mites will come into contact with plants treated with microbial insecticides, miticides, and fungicides. We evaluated the application of foliar microbial insecticides/miticides (Grandevo, Ancora) and soil microbial fungicides (RootShield Plus WP, Stargus) on the behavior of *T. urticae* on ornamental pepper (*Capsicum annuum* L. cv. 'Explosive Ember'). Oviposition acceptance on treated leaf disks was tested for *T. urticae* at 5d, 14d and 34d post initial application. *Tetranychus urticae* was also presented with treated leaf disks in choice tests in order to quantify plant preference and changes in behavior. In oviposition assays, significantly fewer eggs were found on leaf disks treated with Grandevo. No preference was found for treated or control disks. However, in choices tests containing Ancora, mites spent significantly less time on the leaf disks and more time on rim of the Petri dish. The results of these experiments indicate the application of Grandevo can reduce the number of *T. urticae* eggs and Ancora can alter mite behavior as a possible repellent.

### **From bugs to slugs: What's eating our cover cropped soybean? (Second Place-Graduate Student Award)**

**Matthew Longmire**<sup>1</sup>, Jerome Grant<sup>1</sup>, Scott Stewart<sup>2</sup>, and Virginia Sykes<sup>3</sup>

<sup>1</sup> Entomology and Plant Pathology, University of Tennessee, Knoxville, TN

<sup>2</sup>Entomology and Plant Pathology, West Tennessee Research and Education Center, University of Tennessee, Jackson, TN

<sup>3</sup>Plant Sciences, University of Tennessee, Knoxville, TN

Soybean is the number one agricultural crop in Tennessee in terms of both number of hectares planted and in economic value. Soybean is used in a wide variety of products and is marketed globally. Recently, interest in the use of cover crops with soybean has increased in Tennessee. A cover crop, which is planted before the cash crop, can minimize weeds, diseases, insects, and other pests. Traditional methods of cover cropping provide many benefits, but can also have some negative qualities, as an increase in density of certain insect and slug species. Large densities of slugs and certain insects can be destructive to soybean yield. Dual cropping is a newer method of cover cropping in which dual purpose cover crops are harvested as a forage crop prior to cash crop planting. Unfortunately, little research has investigated the impact of dual cropping and cover crops on populations of insects, and other organisms, in Tennessee. Thus, a two-year study was designed and conducted to evaluate the impact of a dual-use cropping system on pest and beneficial insects and other arthropod populations in eastern and middle Tennessee to enable growers to better manage pests to enhance soybean production. Data analysis of this study showed no significant differences in average slug densities among cover crop type ( $p = 0.2428$ ) and no significance between average number of slugs and cover crop management practice ( $p = 0.2535$ ). Average slug density was

significantly different between management practices ( $p < 0.001$ ), among dates ( $p < 0.001$ ), and between pest or beneficial classifications ( $p = 0.001$ ). However, there was no significant differences in the average number of arthropods among cover crop types ( $p = 0.7258$ ). These results imply that the type of cover crop does not impact the number of slugs or arthropods, but the management practice may influence their densities.

## **Pennyroyal Plain parulid predicament: Using a macroinvertebrate bioassessment to characterize Louisiana Waterthrush habitat**

**Nicole Santoyo** and Steve Hamilton  
Austin Peay State University, Clarksville, TN

The Louisiana Waterthrush (*Parkesia motacilla*, family Parulidae) is a neotropical migrant warbler breeding in the eastern United States and southern Canada, where it feeds on both terrestrial and aquatic invertebrates on linear territories along small streams. It has been proposed as a bioindicator due to its reliance on relatively high-quality stream and riparian habitat to feed itself and its nestlings. On the Western Pennyroyal Karst Plain (USEPA Ecoregion 71e, often shortened to “Pennyroyal Plain”), the waterthrush is met by seemingly unfavorable conditions of narrow riparian forest buffers and few aboveground streams, many of which are impacted by intensive row crop agriculture. In order to characterize the conditions in which waterthrush may be found in this ecoregion, I surveyed for waterthrush, sampled instream macroinvertebrates in accordance to TDEC bioassessment protocols, and performed an analysis of forested buffer width using GIS. Waterthrush were found at all sites during either surveys or during macroinvertebrate sampling. Bioassessment results revealed sites to have relatively mild impacts, though some taxa and functional groups were not well represented at all sites. Buffer analyses found forested buffer cover to be generally plentiful in close proximity (30-50m widths) to the stream but not consistent at a further distance (100m). The conditions in which these waterthrush have been found suggest some ability for adults to tolerate agriculturally impacted streams, though their presence does not necessarily indicate nesting success. Further work is needed to ascertain what habitat details are most important to waterthrush – whether singly, as pairs, or to support nestlings.

## **Effects of newer insecticides on *Orius insidiosus* (Hemiptera: Anthocoridae) in laboratory bioassays**

**Uzoamaka C. Abana**, Kaushalya G. Amarasekare and Richard H. Link  
Agricultural and Environmental Sciences, Tennessee State University, Nashville, TN

High arthropod pest populations cannot be sufficiently controlled by only natural enemies. Insecticides also are used to reduce pest populations and prevent crop damage. However, some of these insecticides can cause adverse effects on non-target organisms including key natural enemies in cropping systems. *Orius insidiosus* (Hemiptera: Anthocoridae) is an important biological control agent of arthropod pests under greenhouse and field conditions. We hypothesized that newer, reduced-risk (RR) and organophosphate-replacement (OP-R) insecticides hinder the development and survival of *O. insidiosus*. The objective of this study was to investigate the effects of insecticides on eggs and second instars of *O. insidiosus* at their high label rate and 10% dilutions in

the laboratory. Green beans were placed in the colony for 24 h to obtain beans with *O. insidiosus* eggs. The number of eggs in each bean pod was counted. Bean pods with eggs or bean pods with no eggs were dipped in each insecticide treatment. Treated beans with no eggs were provided to the second instar *O. insidiosus*. Insecticides tested were Spinosad (RR), Novaluron (OP-R), Lambda-Cyhalothrin (OP-R) and two safe insecticides (horticultural oil and insect killing soap). Distilled water was used as the control. After exposing eggs (contact through treated eggs) and nymphs (contact and ingestion through treated beans) to each treatment, we evaluated their developmental time and survival at each life stage until they molted as adults. When compared with the water-treated control, there was considerable variation in response of *O. insidiosus* eggs and nymphs to tested insecticides. Results show that several insecticide treatments negatively affected the developmental time and survival of eggs and second instars of *O. insidiosus*. Lambda-Cyhalothrin and Novaluron were highly toxic while Spinosad and horticultural oil were moderately toxic at both rates, respectively. These insecticides can disrupt integrated pest management programs (IPM) in agricultural cropping systems.

## **Evaluation of systemic fungicides for control of nursery-attacking ambrosia beetles**

**Vivek Ojha**, Jason Oliver, Karla Adesso, Fulya Baysal-Gurel, Nadeer Youssef and Terri Simmons  
Agricultural and Environmental Sciences, Otis L. Floyd Nursery Research Center, Tennessee State University, McMinnville, TN

Non-indigenous ambrosia beetles cause significant losses in nursery production. These exotic beetles aggressively attack trees in their new environment, which can lead to an overreliance on insecticides by the green industry and a lack of integrated pest management. Ambrosia beetles tunnel into the sapwood, where both the adults and larvae feed on introduced symbiotic fungi. Ambrosia beetles are capable of killing healthy nursery trees, but they are more often found attacking weakened or felled trees. The symbiotic relationship between fungi and ambrosia beetles is a potential management target for these pests. This study evaluated multiple systemic fungicide treatments (Pageant, Tartan, Segovis, Empress, Orkestra) in long (3 wk) or short (1 wk) pre-flood treatment timings. Treatments were applied the second week of April to containerized redbud trees beginning to develop leaves to increase the likelihood of fungicide translocation. Non-treated control trees received only water treatments. Following 3 and 1 wk pre-fungicide treatments, tree roots were completely flooded for 11 days to induce stress. Trees also were inoculated with *Phytophthora cinnamomi*, and the pathogen was subsequently re-isolated from diseased roots to confirm virulence. Several fungicides demonstrated promise for beetle and pathogen reduction and will be discussed. Project results shows that application of Segovis, Subdue Maxx, and Orkestra 3 wk before flood stress such as in both *Phytophthora* and without *Phytophthora* inoculation have significant less attacks of ambrosia beetle in comparison to untreated redbud trees.



# **Influence of cover crops on arthropod diversity in woody ornamental production systems**

**Axel Murillo Gonzalez**, Jason B. Oliver, Paul O'Neal and Karla Adesso

Agricultural and Environmental Sciences, Otis L. Floyd Nursery Research Center, Tennessee State University, McMinnville, TN

The impact of cover crop on improving productivity in agriculture has been studied for years, and the benefits include soil physical, chemical, and biological properties. By using cover crops, we slow the erosion process and help to enhance nutrient and moisture availability. Additionally, the use of cover crops can help reduce pest density by providing a habitat for beneficial insects. The purpose of this experiment was to compare the planting method and performance of two cover crop species in terms of arthropods density and diversity. Two winter cover crops, one a legume, crimson clover (*Trifolium incarnatum* L) and the other, triticale (x *Triticosecale* Wittm. Ex A Camus.;  $2n=2N=6X$ , AABRR), which is a cross between durum wheat (*Triticum durum* Desf.;  $2n=2N=4X$ , AABB) and rye (*Secale cereal* L.;  $2n=2N=2X$ , RR). The cover crops were established by drill and broadcast in the middles of a red maple (*Acer rubrum* L) plantation. Pitfalls and sticky traps were used to collect data related to the arthropods density and diversity in each of the 10 m cover crop plots and compare them to weedy plots. The whole experiment will continue through the end of this summer. We hypothesize that arthropod community composition will differ between cover crop plant species and that arthropod density will be higher in drilled plots with higher densities of cover crop coverage.

## **Patterns of pollinators on Rhododendron in hemlock forests**

**David Bechtel**<sup>1</sup>, Jerome Grant<sup>1</sup>, Gregory J. Wiggins<sup>2</sup> Becky Nichols<sup>3</sup>, and Jesse Webster<sup>3</sup>

<sup>1</sup>Entomology and Plant Pathology, University of Tennessee, Knoxville, TN

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Eastern hemlock, *Tsuga canadensis* (L.) Carrière (Pinales: Pinaceae), has been dying in eastern North America at a high rate since the arrival of the invasive pest hemlock woolly adelgid (HWA), *Adelges tsugae* Annand (Hemiptera: Adelgidae). Currently, the only effective control of HWA has been through the use of the neonicotinoid pesticide Imidacloprid. Imidacloprid has potential to harm non-target insects in the hemlock forest system and one group to study for non-target impacts is pollinators. Additionally, with the decline of eastern hemlock forests, it is important to document pollinators occurring in these forest systems. *Rhododendron maximum* L. (Ericales: Ericaceae) was chosen as the model for the pollinator study. Four sites were selected in the Great Smoky Mountains National Park with hemlock forest and an understory component of *R. maximum*. Ten rhododendrons were identified and tagged at each site. Sites were visited one day per week throughout the five-week blooming period of *R. maximum*. During the visit each flowering rhododendron at the site was observed for ten minutes in each of four two-hour time periods. Insect visitors to the flowers were documented and some were collected for identification in the lab. Influence of time on numbers of pollinators and numbers of individual taxa was assessed using ANOVA with Fisher's LSD for mean separation ( $p \leq 0.05$ ). Hymenoptera comprised 89% of all rhododendron flower visitors observed in a total of 64.5 hours of observation, and *Bombus* spp. were the most common visitors. Significantly fewer pollinators were observed at rhododendron flowers

from 8am – 10am and Apidae were significantly greater during the 5pm – 7pm period than any other period observed. This research will improve understanding of pollinators on *R. maximum* in natural habitats, enhance conservation efforts to promote pollinator diversity, and inform land managers about potential ecological risks to pollinators in forest systems.

## **Life history comparison of two green lacewing species (Neuroptera: Chrysopidae)**

**Kyle T. Williams**, Kaushalya. G. Amarasekare, and Uzoamaka C. Abana  
Agricultural and Environmental Sciences, Tennessee State University, Nashville, TN

Green lacewings (Neuroptera: Chrysopidae) are important natural enemies (generalist predators) of soft-bodied arthropods such as aphids, thrips, mealybugs, scale insects, mites and their eggs in many agricultural cropping systems including tree-fruit orchards. They play an important role in the integrated pest management (IPM) of arthropod pests. The insatiable appetites of young larvae make them valuable as biological control agents. Most green lacewings are predatory in their larval stages, but adults are predacious in some species. All adults feed on honey-dew, flower nectar and pollen. We reared the lacewings on an artificial diet of chicken eggs, honey, fructose, wheat germ, dry brewer's yeast, sweetened condensed milk, water. We added fish food for *Chrysopa* species. Information on green lacewings in Tennessee is scarce. Genus *Chrysopa* and *Chrysoperla* are the two most important genera of green lacewings in the family Chrysopidae. We investigated the life histories of two green lacewing species, *Chrysoperla rufilabris* Burmeister from western North America, and *Chrysopa oculata* Say (Neuroptera: Chrysopidae) from middle Tennessee in the laboratory. There were both similarities and differences in their life history characteristics of egg to adult developmental time and survival, sex ratio of emerged adults, longevity of adult male and female and reproduction (fecundity and fertility) of paired adults. *C. oculata* exhibited a significantly longer developmental time for egg, first instar, and pupal stage than *C. rufilabris*. *C. rufilabris* exhibited a significantly shorter egg to adult developmental time than *C. oculata*. Except for the pupal stage, the survival of all other life history stages was not species-specific. Most of *C. rufilabris* developed into adults, while a significantly less number of *C. oculata* survived into adulthood. Also, a significant amount of *C. oculata* adults were classified as males. This information will provide some of the first information on the life history parameters of *C. oculata*.

## **Non-Student Presentations**

### **A year in review: A county extension agent's perspective on what's bugging consumers**

**David Cook**  
University of Tennessee Extension, Davidson County, Nashville, TN.

County Extension Agents receive hundreds of phone calls, numerous emails, and conduct several site visits each year to resolve consumer concerns with insects, spiders, and mites. Consumers look to University Extension Agents for resolution dealing with these alien invaders that infest their

landscapes, gardens, and homes. Agents are generally expected to make an instant, on-site diagnosis and to always have a “Quick Fix.” UT Extension Agent for Davidson County presents “A Year in Review” of the serious and not so serious “What’s Bugging Consumers.”

## **Pests with a purpose**

**Amy Dismukes**

Agricultural and Environmental Sciences, Otis L. Floyd Nursery Research Center,  
Tennessee State University, McMinnville, TN

**No Abstract**

## **Laurel wilt, a new threat to sassafras and northern spicebush in Tennessee and Kentucky**

**Frank A. Hale<sup>1</sup>, T. Stackhouse<sup>2</sup>, Denita Hadziabdic<sup>2</sup>, David Paulsen<sup>2</sup>,  
Jerome F. Grant<sup>2</sup> and Alan S. Windham<sup>1</sup>**

<sup>1</sup>Entomology and Plant Pathology, University of Tennessee Extension, 5201 Marchant Drive,  
Nashville, TN

<sup>2</sup>Entomology and Plant Pathology, University of Tennessee, Knoxville, TN.

Laurel wilt is an invasive, lethal, fungal disease of plants in the family of laurels (Lauraceae). This includes redbay, *Persea borbonia* (L.) Spreng., swampbay, *Persea palustris* (Raf.) Sarg., camphor tree, *Cinnamomum camphora* (L.) Nees & Eberm., pondberry, *Lindera melissifolia* (Walt) Blume, northern spicebush, *Lindera benzoin* (L.) Blume, sassafras, *Sassafras albidum* (Nutt.) Nees, avocado, *Persea americana* Mill. and many others. The pathogen, *Raffaelea lauricola* Harrington & Fraedrich is vectored by an invasive redbay ambrosia beetle, *Xyleborus glabratus* Eichhoff. Both pathogen and the vector are originally found in Asia. Once infected, the disease has a 95% mortality rate whereas during hot weather trees can die within weeks following infection. Dead, brown leaves are often found on trees or shrubs killed while leafed. Another important symptom is the dark brown streaks of discoloration in the outer sapwood just beneath the bark. Control of laurel wilt is limited. The best recommendation is to avoid moving infested sassafras firewood outside of the infested area.

Since its initial report in the U.S. in Savannah, Georgia in 2002, laurel wilt has killed 320 million redbay trees. Prior to 2019, laurel wilt was found in North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas and Arkansas. In July 2019, laurel wilt was found in the Fort Campbell, Kentucky area affecting sassafras trees. Additional finds on sassafras were made into the fall of 2019. Currently, there are three positive counties in Kentucky (Christian, Todd, Logan) and four positive counties in Tennessee (Montgomery, Cheatham, Dickson, Williamson) with an additional county in Tennessee, Robertson, suspected but not yet confirmed. While *X. glabratus* can fly short distances, the infestations in Tennessee and Kentucky are thought to have been established from the movement of a hitchhiking beetle or infested wood.

*Raffaelea lauricola* was confirmed using established protocols. Briefly, wood chips from suspect sassafras trees were collected in the field and sent to UT Knoxville for both morphological and molecular confirmation in the laboratory. Wood chips were first placed in a 10% bleach solution for

30 seconds followed by three washes with sterile water. Sterilized wood pieces were placed onto autoclaved paper towels to dry and then plated onto CSMA++ media (amended with antibiotics). This process was used to obtain pure cultures for DNA isolation and confirmation of species. Samples were subcultured every other day until axenic (pure) culture was obtained. Cultures were first checked for morphology under the microscope then used for DNA isolation. DNA was extracted using GeneJET DNA extraction protocol, followed by PCR amplification using species-specific microsatellite primers. PCR product was checked for both quality and accuracy on a 2% gel, followed by PCR cleanup and sequencing steps to confirm laurel wilt.

Wood-boring beetles were collected from bolts of wood from the Dickson County site. *Apteromechus ferratus* (Say), a hidden snout weevil; *Hypothenemus eruditus* Westwood, a bark beetle; and *Xylosandrus crassiusculus* (Motschulsky), granulate ambrosia beetle were tested for *R. lauricola*. Each beetle was placed in a 1.5 ml tube into which 100 µl of 1% tween solution was pipetted. The tubes were vortexed for one minute. For each sample, 100 µl of liquid was pipetted onto a plate and spread with sterile beads. The beetle was placed on the center of a second plate. The plates were incubated at room temperature in the dark for 1-2 weeks. None of the beetles yielded *R. lauricola*.

The caterpillar of the spicebush swallowtail, *Papilio troilus* Linnaeus, only uses spicebush and sassafras as a host plant. The Palamedes swallowtail, *P. palamedes*, has redbay, swampbay and possibly sassafras as larval host plants. The loss of these host plants in the native range of these butterfly species could seriously threaten their survival. *P. palamedes* is an important pollinator of orange-fringed orchid, *Platanthera ciliaris*. Declines of *P. palamedes* attributed to laurel wilt killing its host plants could substantially limit pollination, reproduction and persistence of *P. ciliaris*.

## **Tennessee detection of the Asian longhorned tick, a serious pest of livestock**

**Karen Vail** and Rebecca Trout Fryxell  
University of Tennessee, Entomology & Plant Pathology, Knoxville, TN  
**No Abstract**

### **Poster Presentation**

## **Seasonal abundance of brown marmorated stink bug (Hemiptera: Pentatomidae) and kudzu bug (Hemiptera: Plataspidae) in Soybeans**

**Kaushalya G. Amarasekare** and Richard H. Link  
Agricultural and Environmental Sciences, Tennessee State University, Nashville, TN

Exotic invasive pest insects can pose a serious threat to soybean production in the U. S. Brown marmorated stink bug (BMSB) *Halyomorpha halys* (Stål) (Hemiptera: Pentatomidae) and kudzu bug *Megacopta cribraria* (Fabricius) (Hemiptera: Plataspidae) are two exotic invasive pests that

have invaded many U. S. states in the recent past. Both species are currently found in Tennessee and pose a threat to soybeans, which is one of the key field crops in the state. Information on seasonal abundance of these two pest species is scarce in Tennessee. Insect monitoring is one of the most important components of integrated pest management to understand the abundances of invasive and other pest species in agricultural cropping systems. Population abundances of arthropod pests are needed to decide whether a pest population warrants any management measures and also to determine when and how to manage them before their populations reach to economic injury level. We assessed the seasonal abundance of the BMSB and the kudzu bug in soybean in 2016 and 2017 in two locations in middle Tennessee using 1–2 insect monitoring techniques. We used commercially-available lures with pyramid traps to monitor the BMSB in weekly intervals in 0.4 ha-field plots. We collected the trapped insects on every 7-day interval and changed the lures once a month. We used weekly sweep sampling with 25 sweeps to monitor both the BMSB and kudzu bug. There were no insecticide applications to the experimental plots during the study period. Results show a low abundance of both the BMSB and kudzu bug in soybean. We speculate that high temperatures and R. H. are limiting factors for the population expansion of BMSB and naturally occurring *Beauveria bassiana* (Bals.-Criv.) Vuill. may be responsible for the low populations of the kudzu bug. Implications of these findings for soybean IPM are discussed.

# **TES Predictions and Evaluations 2019**

**Steve Powell**

Tennessee Department of Agriculture, Nashville, TN

In 2019, no new counties were added to the Emerald Ash Borer quarantine in Tennessee. However, limited EAB and Nursery Commodity Survey purple prism trapping produced 10 new county records for EAB (all in the already quarantined counties) in Tennessee. These 10 counties are Bradley, Carter, Coffee, Johnson, Macon, Meigs, Moore, Overton, Pickett, and Sequatchie. There are 62 counties in Tennessee quarantined for EAB with 58 county records (The four quarantined counties without a county record to date are Cannon, Clay, Grundy, and Warren).

In 2019, a total of 182 Gypsy Moths were captured in TDA trapping plus one in Federal Lands trapping (Sevier County). The county break down of the 182 caught in TDA Gypsy Moth trapping is as follows: Carter (5 moths), Davidson (1 moth), Johnson (158 moths), Sevier (1 moth), Sullivan (7 moths), Unicoi (8 Moths) and Wilson (2 moths). No areas of Tennessee are known to be infested (multiple life stages found) with Gypsy Moth at this time. However, there may be two areas in Johnson County treated with mating disruption from aircraft in 2020. If egg masses are found during the winter, the type of treatment may be changed.

No changes were made to the Imported Fire Ant Quarantine in 2019 in Tennessee. Currently, there are 58 counties fully quarantined and 8 counties partially quarantined for the Imported Fire Ant.

No results for TDA Walnut Twig Beetle trapping are available yet for 2019, but the 2018 catches in TDA Walnut Twig Beetle trapping are as follows by county: Blount (36), Grundy (1), Knox (1), Monroe (3), Roane (1), and Sequatchie (560). Grundy County was a new county record for Walnut Twig Beetle in 2018.

Crape Myrtle Bark Scale was found for the first time in Knox County and Williamson County. The find in Knox County was the first one in the eastern region of the state.

Laurel Wilt was found (on Sassafras) for the first time in Tennessee (Dickson County, Montgomery County) in 2019 as well as in Kentucky (Christian County, Todd County, Logan County).



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### **MEMBERSHIP**

Steve Murphree, Chair

Steve Hamilton

Steve Powell

### **PROCLAMATION**

David Cook, Chair

### **PUBLICITY**

Karen Vail, Chair

Rebecca Trout Fryxell

Amy Dismukes

Greg Wiggins

### **NOMINATING COMMITTEE**

Pat Parkman, Chair

Greg Wiggins

Minutes of the Tennessee Entomological Society can be found at:  
<https://ag.tennessee.edu/EPP/Minutes/Forms/AllItems.aspx>



## HISTORICAL NOTES

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

<u>President</u>	<u>Term</u>	<u>Affiliation</u>
Mendell Snodgrass	'73 - '74	USDA
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	Tenn. Dept. 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 Landingham	'82 - '83	Tenn. Dept. of Agriculture
Carl Brown	'83 - '84	Memphis State University
Charles Pless	'84 - '85	University of Tennessee
Michael E. Cooper	'85 - '86	Tenn. Dept. 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	Tenn. Dept. 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	Tenn. Dept. of Agriculture
Paris Lambdin	'95 - '96	University of Tennessee
Frank Hale	'96 - '97	University of Tennessee
Steve Murphree	'97 - '98	Belmont University
Clete Youmans	'98 - '99	American Cyanamid
Catharine Mannion	'99 - '00	TSU Nursery Crop Res. Cnt.
Gray Haun	'00 - '01	Tenn. Dept. of Agriculture
Steven Hamilton	'01 - '02	Austin Peay State University
John Skinner	'02 - '03	University of Tennessee
Jason Oliver	'03 - '04	TSU Nursery Crop Res. Cnt.
Scott Stewart	'04 - '05	University of Tennessee
Cindy Bilbrey	'05 - '06	Tenn. Dept. of Agriculture
Karen Vail	'06 - '07	University of Tennessee
Don Sudbrink	'07 - '08	Austin Peay State University
Bruce Kaufmann	'08 - '09	University of Tennessee

David Cook	'09 - '10	University of Tennessee
Cletus Yeomans	'10 - '11	BASF
Gene Burgess	'11 - '12	University of Tennessee
Mike Studer	'12 - '13	Tenn. Dept 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

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

<u>Secretary-Treasurer</u>	<u>Term</u>	<u>Affiliation</u>
Jimmy White	'73 - '76	Tenn. Dept. 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 - Present)**

<u>Secretary</u>	<u>Term</u>	<u>Affiliation</u>
Gary Lentz	91 - '02	University of Tennessee
Gene Burgess	'02 - '08	University of Tennessee
Steve Murphree	08 - '19	Belmont University

**Treasurers of the Tennessee  
Entomological Society (1991 - present)**

<u>Treasurer</u>	<u>Term</u>	<u>Affiliation</u>
Harvey Barton	'91- '97	Arkansas State University
Steve Powell	'97- '19	TN Dept. of Agriculture

**Editors of the Tennessee  
Entomological Society (1991 - present)**

<u>Editor</u>	<u>Term</u>	<u>Affiliation</u>
Gray Haun	'91 – '99	TN Dept. of Agriculture
Lynn Snodderly	'00 – '01	TN Dept. of Agriculture
Gray Haun	'01 – '09	TN Dept. of Agriculture
Jerome Grant	'09 – '12	University of Tennessee
Karla Adesso	'16 – '19	Tennessee State University
Greg Wiggins	'20 – '22	University of Tennessee

**Members at Large**

<u>Member</u>	<u>Term</u>	<u>Affiliation</u>
Gary Lentz	'87 - '88	University of Tennessee
Blake Bevill	'87 - '88	Arkansas State University
Michael E. Cooper	'88 - '89	TN Dept. Agriculture
Jay P. Avery	'88 - '89	University of Tennessee
Joe Dunn	'89 - '90	American Cyanamid Company
Charles Pless	'89 - '90	University of Tennessee
Paris Lambdin	'90 - '91	University of Tennessee
Jim Keener	'90 - '91	TN Dept. of Agriculture
Steve Powell	'91 - '92	TN Dept. 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	TN Dept. of Agriculture
Ray Nabors	94 - '95	Univ. of Missouri
Alan Hopkins	94 - '95	Miles, Inc.
Steve Powell	95 - '96	TN Dept. of Agriculture
Jim Bogard	95 - '96	TN Dept of Agriculture (Retired)
Hans Chaudhary	96 - '97	TN Dept. of Agriculture
Cletus Youmans	96 - '97	American Cyanamid
Larry Latson	97 - '98	Lipscomb University
Catharine Mannion	97 - '98	TN State University
Karen Vail	98 - '99	University of Tennessee
Roberto Pereira	98 - '99	University of Tennessee
Jim Keener	00 - '01	TN Dept. of Agriculture
Lee Greer	00 - '01	Valent
Frank Hale	01 - '02	University of Tennessee
Ray McDonnell	'01 - '02	TN Dept. 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	TN Division of Forestry
Gray Haun	'08 - '09	TN Dept. of Agriculture
Mike Studer	'08 - '09	TN Dept. of Agriculture
Steve Hamilton	'09 - '10	Austin Peay State University
Mike Studer	'09 - '10	TN Dept. of Agriculture
Steve Hamilton	'10 - '11	Austin Peay State University
Mike Studer	'10 - '11	TN Dept. 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 Adesso	14 - '15	TN State University
David Cook	'14 - '15	University of Tennessee
Karla Adesso	15 - '16	TN State University
David Cook	'15 - '16	University of Tennessee
Gene Burgess	16 - '17	University of Tennessee (ret.)
Gray Haun	'16 - '18	TN Dept. of Agriculture (ret.)
Amy Dismukes	'19 - '21	University of Tennessee

**Historians of the Tennessee  
Entomological Society (1973 - Present)**

<b><u>Historian</u></b>	<b><u>Term</u></b>	<b><u>Affiliation</u></b>
Charles Pless	'73 - '76	Univ. of Tennessee
Herb Morgan	'76 - '79	USDA
Mendell Snodgrass	'79 - '82	USDA
Russ Patrick	'82 - '92	Univ. of Tennessee
Harry Williams	'92 - '01	Univ. of Tennessee (retired)
Frank Hale	'01 - '21	Univ. of Tennessee

**Honorary Members of the Tennessee  
Entomological Society (1982 - Present)**

<b><u>Honorary Member</u></b>	<b><u>Year</u></b>	<b><u>Affiliation</u></b>
Jimmy White	1982	Tenn. Dept. of Agric.
Mendell Snodgrass	1983	USDA
Carl Brown	1985	Memphis State
Myrtice Snodgrass	1985	Knoxville, TN
John A. Hammett	1987	Tenn. Dept. of Agric.
Joe C. Dunn	1990	American Cyanamid
Harry Williams	1997	Univ. of TN (retired)

**Harry E. Williams Award (est. 2002)**

<b><u>Recipient</u></b>	<b><u>Year</u></b>	<b><u>Location</u></b>
Kim Woodard	2002	Trousdale Co.
Liam Black and Kimberly Woodard	2003	Hardeman Co. and Trousdale Co.
Reed Avent	2006	Bolivar, TN
Andy Brown	2008	Coffee Co.
Phillip Adams	2009	Burns, TN
Jonathan Belcher	2010	Rutherford Co.
Kade Parker	2011	Maryville, TN
Kade Parker	2012	Maryville, TN
Steven Davis	2013	Loudin Co.
Angel Chaffin	2014	Sevier Co.
Perrein Heselschwerdt	2015	Claiborne Co.
-----	2016	(No award given)
Keaton Pennick	2017	Weakley Co.
Samantha Bussell	2018	Macon Co.
Analyynn Jones	2019	Robertson Co.

**Howard Bruer Award (est. 1975)**  
**Recipients of the Tennessee Entomological Society (1975 - Present)**

<u>Recipient</u>	<u>Year</u>	<u>Location</u>
Whitney Eckler	1975	Memphis, TN
Joe Martin	1976	Bolivar, TN
Bryan Peters	1977	College Grove, TN
Tidus Pollard	1978	Huron, TN
John Bentley	1979	
Melissa Hart	1980	Watertown, TN
Gary Miller	1981	Knoxville, TN
Harold Glass	1982	Knoxville, TN
-----	1983	(No award given)
-----	1984	(No award given)
Penny Thompson	1985	Davidson County
Matthew Fumich	1986	Munford, TN
Christie Greer	1987	Greene Co.
Dottie Hodges	1988	Hamblen Co.
-----	1989	(No award given)
Tim Gentry	1990	Woodbury, TN
Jennifer Hartsell	1991	Hamblen Co.
Jessica Taylor	1992	Lincoln Co.
Jennifer Lenter	1993	Fayetteville Co.
Jeremy Smith	1994	Savannah Co.
George Carroll	1995	Anderson Co.
Stacy Milhahn	1996	Lincoln Co
Nancy Warden	1997	Marshall Co.
Denise Byrum	1998	Moore Co.
James Johnson	1999	Bolivar, TN
Wade Black	2000	Hardeman Co.
Sara List	2006	Coffee Co.
-----	2008	(No award given)
Grant Fisher	2009	Sevierville, TN
Julia Britto	2012	Oak Ridge, TN
Swasti Mishra	2013	Davidson Co.
-----	2014-2018	(No award given)
-----	2019	(No award given)

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

<b><u>Recipient</u></b>	<b><u>Year</u></b>	<b><u>Affiliation</u></b>
Myron Smith	1981	Hill Smith Pest Control
Harry Williams	1985	Univ. of Tennessee
John A. Hammett	1987	Tenn. Dept. of Agric.
Joe C. Dunn	1991	American Cyanamid

**Richard E. Caron Outstanding Entomologist Award**

<b><u>Recipient</u></b>	<b><u>Year</u></b>	<b><u>Affiliation</u></b>
Harry Williams	1995	Univ. of TN (Retired)
Harvey Barton	1996	Arkansas State Univ. (Retired)
Carroll Southards	1997	Univ. of TN (Retired)
Harold Bancroft	2001	Univ. of Memphis
Charles Pless	2002	Univ. of Tennessee (retired)
Gary Lentz	2008	Univ. of Tennessee (retired)
Reid Gerhardt	2009	Univ. of Tennessee (retired)
Gene Burgess	2011	Univ. of Tennessee (retired)

**Undergraduate Student Award (est. 2015) Recipients of the Tennessee  
Entomological Society**

<b><u>Recipient</u></b>	<b><u>Year</u></b>	<b><u>Location</u></b>
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 University
Andrew Dixon (1st)	2018	University of Tennessee
Brianna Alred (2nd)	2018	University of Tennessee
Caroline Barnes & Maya Rao (1st)	2019	University of Tennessee

**Graduate Student Award (est. 1986) Recipients of the  
Tennessee Entomological Society (1986 - Present)**

<u>Recipient</u>	<u>Year</u>	<u>Location</u>
Jay Avery	1986	Knoxville, TN
Laura Rogers	1987	Knoxville, TN
Jason Oliver	1988	Knoxville, TN
Steve D. Powell	1989	Knoxville, TN
Robert C. Brown	1990	Knoxville, TN
Donald L. Sudbrink, Jr.	1991	Knoxville, TN
Deborah Landau	1992	Knoxville, TN
Deanna Colby	1993	Knoxville, TN
Lee Holt	1994	Knoxville, TN
Kenneth Copley	1995	Knoxville, TN
Dina Roberts	1996	Memphis, TN
Bryan Hed	1997	Knoxville, TN
Gary Moughler	1998	Knoxville, TN
Andrew Beld	1999	Nashville, TN
Lacey McNally	2000	Baton Rouge, LA
Ken Davenport	2001	Clarksville, TN
Debra Hoyme	2002	Knoxville, TN
Amy Kovach	2003	Knoxville, TN
Andrew Haddow	2004	Knoxville, TN
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 Nix (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
Katie Britt (2nd)	2015	University of Tennessee
David Theuret (1st)	2016	University of Tennessee
Emel Oren (2nd)	2016	University of Tennessee
Brandy Schnettler (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

**CONSTITUTION**  
**of the**  
**TENNESSEE ENTOMOLOGICAL SOCIETY**  
**(as of October 1991)**

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.

Article 3. Membership

Section 1. Original Members: Any person designated at the organizational meeting of the Society to occupy the status of "Member" shall be considered as and be a Charter Member. Thereafter, the organizational membership shall have no authority to name or appoint members of the Society.

Section 2. Membership: Membership shall be open to all persons interested in Entomology.

Section 3. Sustaining Membership: Sustaining Membership is open to commercial or industrial organizations upon meeting approval and requirements of the Board of Directors.

Section 4. Honorary Membership: Honorary Members may be selected from time to time by a majority vote of the Board of Directors.

Section 5. Student Membership: Student Membership is open to students enrolled in any education institution and meeting the requirements of the Board of Directors.

Section 6. 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 Treasurer. After approval of the majority of the Board of Directors, said applicant shall become a duly constituted member.

Section 7. Members in Good Standing: A member who is current in payment of dues.

#### Article 4. Membership Rights

Section 1. Voting: Each member in good standing shall be entitled to one vote at any regular or special meeting or by mail. 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.

#### Article 5. Membership Certificates

Section 1. Certificates: The Board of Directors shall decide upon 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 the annual dues for membership in the Society will be established by the Board of Directors from time to time. 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 the annual meetings. However, a member may mail dues to the Treasurer of the Society if the member cannot attend a given annual meeting. If a member fails to pay dues two (2) years in a row, such member shall be dropped from the rolls.

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 properly brought before the meeting.

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

Section 4. Notice: Notice of all meetings of the Society, annual or special, stating time, place, and agenda shall be mailed to each member by the President, Secretary, Treasurer, or Directors calling the meeting not less than seven (7) days prior to the meeting.

## 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 majority vote of members or by mail. The first President of the Society shall be elected by and from the membership at the organizational meeting for a term extending to the beginning of the first annual meeting. Thenceforth, 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 of three (3) members appointed at the annual meeting by the President. Nominations may also 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 and resolutions and regulations duly adopted by the Board of Directors, execute all contracts in the name of the Society, 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 from time to time.

Section 4. Duties and Powers of the Secretary: The Secretary shall attend and keep the minutes of all meetings of the Board of Directors and the Society, shall have charge of the records and seal of the Society, and shall, in general, perform all the duties incident to the office of Secretary of the Society.

Section 5. Duties and Powers of the Treasurer: The Treasurer shall keep full and accurate accounts of the books of the Society and shall deposit all monies and the valuable properties and effects in the name of and to the credit of the Society in such depository or depositories as maybe designated by the Board of Directors. The Treasurer shall disperse funds as may be ordered by the Board, getting proper receipts for such disbursements; and shall render to the Board of Directors whenever required by it, an accounting of all transactions as Treasurer. During each

annual meeting, the Treasurer shall give a report on the annual financial condition of the Society. The Treasurer shall, in general, perform all the duties incident to the office of Treasurer of the Society.

Section 6. Duties and Powers of the Editor: The Editor shall be a member of the Board of Directors and Chair of the Publication and Editorial Committee and be responsible for editing and publishing such publications as directed by the Board of Directors and passed by the majority of the voting membership at a called meeting.

Section 7. 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 from year to year.

Section 8. Vacancies in Office: Any vacancy in the office of President-Elect, Secretary, Treasurer, Editor, or Historian, however occasioned, may be filled, pending the election of a successor by the Society, 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 in Article 8, Section 1, of this Constitution.

#### Article 9. Board of Directors

Section 1. Makeup and Responsibilities: The Board of Directors shall consist of the immediate past-President, the 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 one year. Any three (3) Directors shall constitute a quorum for the transaction of business. 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, of this Constitution, at the annual meeting of the Society, or at any adjourned meeting, 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 of the members for the transaction of such business as may come before the Board. No notice of such meeting shall be required, and should a majority 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 at such places as may be specified in the notice thereof, whenever called by the President or any two (2) or more Directors.

Section 5. Notice: 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.

Section 6. Vacancies in Board of Directors: Any vacancy in the office of any Director, however occasioned, may be filled, pending the election of a successor by the Society, by a majority vote of the remaining Directors.

#### Article 10. Miscellaneous Provisions

Section 1. All checks and drafts shall be signed in such manner as the Board of Directors may from time to time 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. All notices required to be given by this Constitution relative to any regular or special meeting of the Society or the Board of Directors may be waived by the Directors or members entitled to such notice, either before or on the date of the meeting and shall be deemed equivalent thereto. Attendance at any meeting of the Society or the Board of Directors shall be deemed a waiver of notice thereof.

Section 4. 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 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.

## **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 conduct 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 annual 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 arrangements 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 the 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 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 of the 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 designated 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, an 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 and 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 session 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 general 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.<sup>1/</sup>
3. Arrange to have a plaque made honoring the Howard Bruer Award recipient (contact TES treasurer) and deliver the plaque and news release information to the recipient's county agent for presentation/publicity at a later date.<sup>2/</sup>
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.<sup>2/</sup>
8. Determine if it is appropriate to award the Richard E. Caron 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.<sup>2/</sup>

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

- <sup>2/</sup> Contact Award Committee Chair and President about having plaques made at least one month before the annual meeting.
9. Have a committee meeting immediately following the second paper session at 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 articles 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 Program Committee has planned a theme 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. Maintain 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

area 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 last dues payment.

H = Honorary Member



