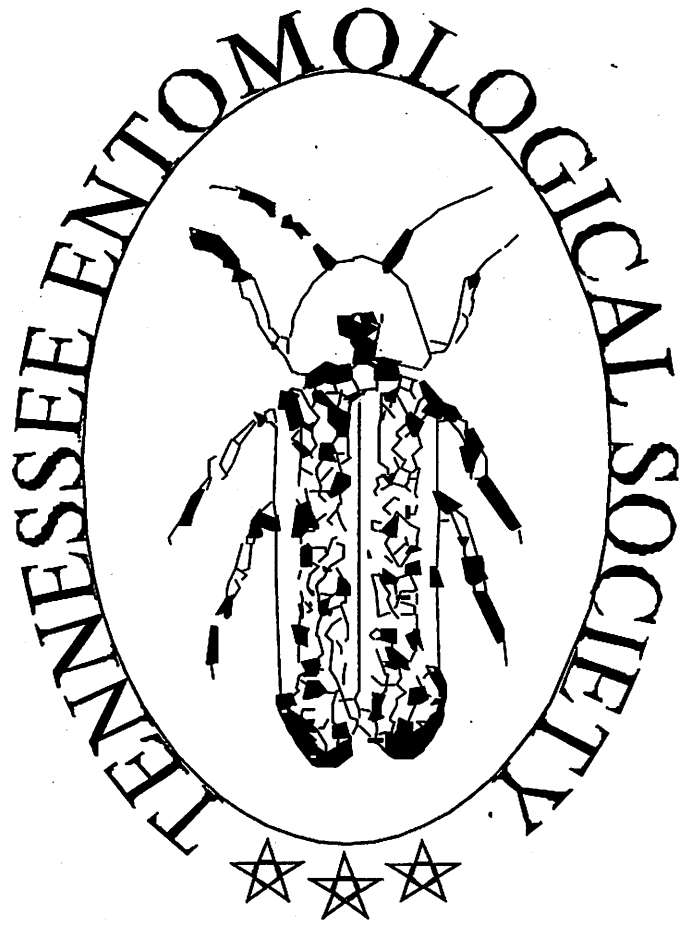
THE FIREFLY

Proceedings of the 2002 (Twenty-Ninth)
Annual Meeting of the
Tennessee Entomological Society



October 10-11, 2002
ED JONES AUDITORIUM ELLINGTON CENTER
TENNESSEE DEPARTMENT OF AGRICULTURE
Nashville, Tennessee

Volume Seventeen

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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, 2004** to:

Dr. Karen M. Vail
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PROCEEDINGS OF THE TWENTY-NINTH ANNUAL MEETING OCTOBER 10-11, 2002

Ed Jones Auditorium
Ellington Center
Tennessee Department of Agriculture
Nashville, Tennessee

AFRICANIZED HONEY BEES - WHEN WILL THEY ARRIVE IN TENNESSEE?

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Africanized honey bees (AHB) are a distinct population of the common social *Apis mellifera*. This population (sometimes referred to as a race or subspecies *A. m. scutellata*) developed in Eastern Africa and naturally occurs from the southern Nile River region to South Africa. It is distinct for the cape bee (*A.m. capensis*) of the extreme tip of South Africa, a population along the eastern coastal region (*A.m. littorea*), higher elevation population *A.m. monticola* and the bee race of western African tropical areas *A. m. adansonii.*

In an effort to improve the honey bees of Brazil, a noted geneticist Warrick Kerr carried queens of African bees to San Paolo, Brazil in 1956 with the intention of using the stock to breed a bee population better suited to American tropical/subtropical conditions. Dr. Kerr sought to use the bees well known productivity (they were the Guinness Book record holders for greatest honey production in a single year) while reducing their equally well known propensity for defensiveness by creating a suitable hybrid.

Forty seven surviving queens carried by Kerr to Brazil were initially installed in bee colonies at the University of San Paulo. They needed to be moved, perhaps due to their defensiveness and stinging of individuals, to a more isolated Eucalyptus planting. While at this site, protective queen excluders were removed and before the error could be discovered the colonies subsequently swarmed, a behavior they excel in. Then a fateful decision was made to distribute the African stock without breeding intervention, especially using virgin queens that would then, it was assumed, hybridize with the honey bees in Brazil.

Remarkably, the bees did not hybridize to any degree (although the population is know as Africanized there is little change of the African parental DNA) but instead were able to keep their genetic identity which included heightened swarming, absconding and queen rearing, behaviors that enable them to excel at colonization. Within 6 years they spread as far as Rio de Janeiro (500 Km). With heightened defensiveness and rapid queen rearing, beekeepers quickly came to recognize this bee stock as different from what they were accustomed to. It spread rapidly, as much as 500 Km/yr in some areas. Today the population occurs naturally from

Argentina to the US, absent only in Chile, Canada, and all but a few Caribbean island nations. Within the US the population as of 2002 was confined to the 5 western states of Texas to California.

The Africanized bee, labeled the 'Killer bee' by Time Magazine in 1965, is, and continues in Africa and subsequently in the Americas, a population with several distinctive characteristics. It is highly defensive and easily disturbed at its home site (hive) and the workers leave the home to defend outside When disturbed it noisily flies into individuals/animals moving about and has a wide search area. Like all honey bees, the workers can sting but once. Some of the other behaviors that help distinguish this population are: rapid growth of population; short interval to raise queens (which take only 14 days, versus 16 days for temperate bees, to mature); running behavior within hive and abandonment of comb when hive is inspected; higher use of available beeswax cells; higher absconding/swarming rates; and a tendency to forage as gleaners with less reliance on dance language stimulation. It is a distinctive population – one well suited to colonization.

So when will they arrive in Tennessee? The Tennessee Department of Agriculture and UT, Knoxville Department of Entomology & Plant Pathology personnel have been actively surveying for AHB arrival. To date all suspect finds have been investigated and no AHB's have been detected in Tennessee; they have been detected and individual colonies destroyed to the north (Virginia) and south (Alabama, Georgia and Florida) of the state.

Failure of the AHB population to move eastward of Houston, TX has been a surprise for which we have no ready explanation. Areas along the Gulf Coast and the peninsula of Florida appear to be ideal areas to sustain populations of the Africanized honey bee. There have been numerous intercepts of populations from ships, Interstate trucks and trains and RV vehicles. So far, no population has established from such incidental introductions – known AHB populations are due to the main population moving into an area or due to a substantial introduction of colonies (Peru) or queens (Caribbean islands of Puerto Rico, Trinidad, US Virgin Islands and probably Hispanola).

From high altitude studies I have conducted in Bolivia and others studies in the mountains of Costa Rica and Venezuela, we know the Africanized honey bee will not be as successful in colonization or as dominant in defensive behaviors the further north it proceeds in the US. In Argentina, a stable line of southward expansion has been realized and the southern areas remain AHB free unless colonies are moved from AHB colonized areas into the southern region. With expected, but unknown

timing, of colonization of the Gulf Coast states and the Florida peninsula, Tennessee will eventually have Africanized honey bee stock moved within the borders and the population eventually become established here.

The good news is we can predict that Africanized honey bees will be manageable
in Tennessee and populations will increase only slowly and their impact not significantly as negative as in more southerly states in the US.

LEAF CONSUMPTION BY A NORTH AMERICAN FLEA BEETLE, *ALTICA LITIGATA* , AND ITS IMPACT ON SEED PRODUCTION OF PURPLE LOOSESTRIFE, *LYTHRUM SALICARIA*

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Purple loosestrife, *Lythrum salicaria* L., an exotic, wetland perennial, forms large, monotypic stands throughout many temperate regions of the U.S. and Canada. This invasive plant replaces native vegetation, degrades wildlife habitats, and obstructs waterways. A large population of a native, herbivorous insect, *Altica litigata* Fall, was found feeding on purple loosestrife in upper eastern Tennessee, and both larvae and adults fed on foliage and caused plant damage. Thus, a two-year research project was initiated in 2000 to assess the impact of this North American flea beetle, *A. litigata*, on leaf consumption and seed production of purple loosestrife in eastern Tennessee.

The study site was located in Unicoi County, Tennessee, along the banks of South Indian Creek, where a small infestation of medium density of purple loosestrife exists, and was monitored two times weekly from April to September. To assess impact of adult feeding on numbers of seed capsules and seeds/capsule, plants were placed into four damage rating categories: 1) none, 2) minor, 3) moderate, and 4) major. Ten additional plants, extensively damaged by larvae, also were evaluated. Plant height, number of seed capsules/lateral, number of laterals, and number of seeds/capsule were measured. In the laboratory, leaf consumption by adults was measured using a leaf area meter. Adults (0, 2, 4, or 6 male or female) were fed foliage, which was measured and replaced every 2 days. Leaf consumption by adults will be presented and discussed.

In the field, larval feeding was extensive; skeletonized foliage appeared "burned" and reduced plant viability and flower maturity. Larval damage caused large reductions in seed production and seeds/capsule.

Feeding damage caused by *A. litigata*, especially by larvae, greatly impacted production of seed capsules and seeds. This research provides the first documentation of the biology, seasonality, and impact of *A. litigata* on purple loosestrife. This incidence of *A. litigata* also represents a new state record. Further research is needed to better understand the biology, impact, and biological control potential of *A. litigata* on purple loosestrife.

SURVEILLANCE OF TWO CONTAINER-INHABITING MOSQUITO SPECIES IN FIVE EASTERN TENNESSEE COUNTIES

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Surveillance of *Ochlerotatus triseriatus* and *Aedes albopictus* mosquitoes (Diptera:Culicidea) in five eastern Tennessee counties (Knox, Hamblen, Jefferson, Sevier and Blount) has taken place from 1998 to 2002. A total of five oviposition traps were attached to trees throughout each trapping site and collected fourteen days later to ascertain information on the seasonal patterns of two container inhabiting species. Of the five sites surveyed, three were considered rural or suburban in habitat type (Knox, Jefferson, and Blount County). *Oc. triseriatus* was the prominent species throughout these forested areas and egg production levels ranged from a ratio of 2.2:1 to 15.8:1 in comparison to *Ae. albopictus*. Hamblen and Sevier County sites are urbanized and have an abundance of tires and discarded containers allowing for a more evenly distributed egg ratio of approximately 1:1.

Ochlerotatus triseriatus mean beginning and ending egg production dates from 1998-2002, in all five counties, are May 9 and October 9. *Aedes albopictus* average first and last egg production dates are May 11 and October 14. Egg production levels are greatest for *Oc. triseriatus* in the month of June and decreases throughout the later part of the summer. *Aedes albopictus* egg production increases in mid July and sustains high levels until September. This fluxuation in population sizes allows for a continually abundant population of container inhabiting species from May to October. However, the week of onset for La Crosse encephalitis is highest in mid August. Therefore, increased populations of *Ae. albopictus* from July to September may associate this container inhabiting mosquito with the transmission of La Crosse encephalitis.

GEOGRAPHIC DISTRIBUTION OF LA CROSSE ENCEPHALITIS IN EASTERN TENNESSEE

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In eastern Tennessee there was a total of 17 cases of a La Crosse (LAC) encephalitis viral infection reported to the East Tennessee Department of Health in 2000. During that same time, 25 cases of other Central Nervous System infection (CNSI) that were not La Crosse were also reported. Out of those 43 cases 11 were chosen to be revisited (6 Central and 5 LAC) and the nearby wooded habitats were surveyed. Geographic Information Systems (GIS) was utilized to plot each case location on various maps.

A High LAC Area and Low LAC Area were noted and included parts of four counties. The HIGH LAC Area had a similar incidence as the Low LAC Area for CNSI but the High LAC Area had 12 cases of La Crosse while the Low LAC Area had none.

LA CROSSE ENCEPHALITIS IN EASTERN TENNESSEE: A CASE COMPARISON STUDY 2001

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Peridomestic landscape factors were investigated at 24 La Crosse (LACE) encephalitis and 79 control sites in an eleven county region in eastern Tennessee to determine the factors that place residents in these counties at risk for LAC encephalitis. Disposable containers were about three times as common at LAC encephalitis sites than at controls as was one or more tree holes. Mature and successional forests commonly surrounded LAC encephalitis sites; however, control sites were most commonly situated in suburban habitats. Most of the LAC encephalitis cases (70%) were less than 15.2 meters from the forest. *Aedes albopictus* eggs were collected from every site that oviposition traps were placed; yet *Oc. triseriatus* eggs were only collected from 60 sites (92%) in 2001. *Aedes albopictus* female larvae and pupae were fifty times more likely to be encountered at the LAC encephalitis sites than at the control site in tree holes and containers, but no difference with *Oc. triseriatus* was found. The overall mosquito burden (larvae/pupae collected and host seeking adults from adult traps) for *Ae. albopictus* but not for *Oc. triseriatus* was higher at the LAC encephalitis sites than at the control sites.

Mean elevations, mean permanent containers, mean tree holes, and yard conditions at LAC encephalitis or control sites were not significantly different. No arboviruses were isolated from mosquitoes collected or reared from any of the sites.

ESTERASES IN THE COTTON BOLL WEEVIL, *ANTHONOMUS GRANDIS*

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ABSTRACT NOT AVAILABLE

BODY COLOR IN THE COTTON BOLL WEEVIL, *ANTHONOMUS GRANDIS*

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ABSTRACT NOT AVAILABLE

A COMPARISON OF INTERIOR, EXTERIOR OR COMBINED TREATMENTS FOR ODOROUS HOUSE ANT CONTROL

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ABSTRACT NOT AVAILABLE

E. COLI 0157, HOUSE FLIES AND STABLE FLIES

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Preliminary data produced at the UT Knoxville Experiment Station Dairy Unit indicate that there is a close temporal association between Shiga toxin *E. coli* O157 shedding in cattle and the prevalence of STEC on synanthropic (filth) flies and the population levels of those flies. There is a strong association with house fly populations, STEC bovine fecal shedding and STEC occurrence on house flies. Stable flies did harbor STEC but the association was weak.

INTEGRATING NON-CHEMICAL MANAGEMENT TACTICS FOR *VARROA DESTRUCTOR* ANDERSON AND TRUEMAN

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The varroa mite, *Varroa destructor*, is the most destructive pest of the honey bee, *Apis mellifera*, throughout most of the world. Bee colonies infested with *Varroa* are less productive, weaker and more susceptible to stress factors such as cold weather. Only two acaricides are registered for *Varroa* control in the US; and *Varroa* has exhibited resistance to both of these products.

In response to acaricide resistance and to concerns of beekeepers about hive product contamination, non-chemical control tactics have been developed. Heritable traits that suppress *Varroa* reproduction have been selected. Research entomologists at the USDA have selected for a line of bees expressing a Suppression of Mite Reproduction (SMR) trait. Female mites which develop in cells of SMR bees can not produce their normal number of progeny. A cultural tactic, using open-screened hive bottom boards (Fig. 2), reduces *Varroa* populations by preventing fallen mites from reentering the colony. The open bottom board (OBB) replaces the traditional closed bottom board.

We are studying the combined effects of *Varroa*-resistant stock, OBBs and another cultural tactic, apiary isolation. In spring 2002, 40 new colonies were established using 1-kg packages, consisting of adults from established colonies, and new queens: either non-resistant Italian queens or instrumentally inseminated, SMR queens. Management tactics were randomly assigned to colonies so that there were 5 replications of each combination of tactics: 1)

SMR queen or non-resistant queen, 2) open bottom board (OBB) or solid bottom board, and 3) isolated or non-isolated apiary. Isolated apiaries were located at least 2 km from known apiaries; non-isolated apiaries were located adjacent to *Varroa*-infested colonies. Mite abundance, estimated using bottom board sticky trap collections of natural mite fall, was determined at three-week intervals. Colony strength estimates of bee, brood and stores abundance were made at six-week intervals.

Establishment proved difficult for colonies with SMR queens and/or OBBs. Twenty-three colonies with SMR queens, OBBs or a combination of both had to be re-established, some more than once. Several SMR queens were observed as failing (suboptimal oviposition). Also OBBs did not appear to be conducive to establishing small packages. By September (125 d post-establishment), however, a sufficient number of colonies had been established for an adequate amount of time to allow for data analysis.

Varroa abundance differed among the treatment combinations; there were greater than 40 times more *Varroa* in non-isolated colonies with non-resistant queens and closed bottom boards than in isolated colonies with SMR queens and OBBs. The differences in *Varroa* abundance among the treatment combinations could be accounted for, in magnitude, by genetics > apiary location > bottom board type. Because of differences in establishment date, colony strength was not used to compare treatment effects. By 105 d post-establishment, 4 colonies exceeded the established *Varroa* treatment thresholds. None had the treatment combination of SMR queen + isolation + OBB.

Results suggest that *Varroa* populations can be suppressed with non-chemical management tactics. Caution should be taken, however, when establishing small packages over open bottom boards.

WEST NILE VIRUS UPDATE: 2002

K. Gottfried
The Tennessee Department of Health

WNV 2002: Tennessee Summary Tennessee experienced widespread West Nile virus activity in 2002. There were 56 documented human cases including 6 deaths due to either West Nile meningoencephalitis (86%) or West Nile fever (14%). The majority (87%) of the human cases were from the western region of the state with Memphis/Shelby County reporting 71% of the total cases from an epidemiologically significant human risk area

identified in downtown Memphis (human case rates as high as 20 per 100,000 residents). Statewide, human case peak incidence occurred in late August with disease onsets ranging from July 22-October 19, 2002. Equine specimens (n=333) were tested for WN virus and 148 equine were positive for the virus. Blue jays and American crows (1178) were tested for the presence of West Nile virus and 68% of the blue jays were positive and 77% of the American crows were positive. The first positive birds were identified approximately 2 months prior to the first human or equine cases in the state. As in other states of the US, dead bird surveillance and the detection of early transmission activity in Tennessee was an indication of potential human and equine cases to follow. Mosquitoes were collected from two counties (Jefferson and Shelby) and tested for WN virus. Positive mosquitoes were found in the human risk area of Memphis/Shelby County. Average minimum infection rate were 16.2 per 1000 mosquitoes with a range of 3-54 positive mosquitoes per 1000 tested.

MONITORING BUPRESTID BORERS IN PRODUCTION NURSERY AREAS

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Flatheaded borers, like the flatheaded appletree borer (*Chrysobothris femorata* [Olivier]) (Coleoptera: Buprestidae), are important pests of ornamental trees, particularly newly transplanted trees undergoing establishment stress. A number of factors like environment (temperature/ rainfall), pest population size, natural enemies, and presence of susceptible host plants can affect borer activity and damage levels. Current extension recommendations for flatheaded borer prevention include a mid-May and late June trunk treatment with chlorpyrifos. However, calendar spray schedules may not always offer reliable insect management, because borers may not be present at the time of treatment. Extensive tree loss can occur if treatments are not applied at the correct time. The objectives of this study were to 1) determine species of flatheaded borers responsible for damage to several key woody ornamentals (i.e., maple, crabapple, oak, cherry, and dogwood), 2) determine the level of damage caused by flatheaded borers in production nurseries, and 3) develop a method for predicting seasonal flight patterns of economically important buprestid species.

Tree damage by flatheaded borers was surveyed during March in at least one Tennessee production nursery in Coffee, DeKalb, Franklin, Grundy, and Warren counties. A total of 7190 trees were examined of which 435 (6.1%) and 11 (0.2%) had damage characteristic of either flatheaded or clearwing borer, respectively. The percent flatheaded borer damage for specific tree species were ash (0.0%; n = 808), oak (0.0%; n = 360), cherry (0.4%; n = 534), redbud (1.3%; n = 151), crabapple (2.0%; n = 593), maple (8.4%; n = 3362), and dogwood (9.1%; n = 1382). The trunk location with flatheaded borer damage ranged from 1.2 to 33.0 cm above the ground and predominantly faced south-south-west in direction (average = 206.6°). Sticky traps were developed to trap and monitor buprestid borers. Long (0.9 m) strips of heavy colored wallpaper about 7 cm wide were folded longitudinally and stapled along the cut sides. To simulate sapling tree silhouettes, these paper strips were sheathed over metal stakes that had been driven into the ground and covered with Pestick™ insect glue. In 2001, adult buprestids were collected on gray (8.6%; n = 22), yellow (9.4%; n = 24), white (11.0%; n = 28), blue (14.1%; n = 36), green (15.0%; n = 38), and red (42.0%; n = 107) sticky traps. In 2002, adult buprestids were collected on yellow (6.9%; n = 15), white (10.1%; n = 22), green (12.4%; n = 27), blue (15.2%; n = 33), gray (21.7%; n = 47) and red (33.6%; n = 73). During 2002, a second sticky trap experiment tested multiple shades of red-colored wallpaper to refine buprestid color preference. Borers were collected on orange (4.9%; n = 31), dark red (5.7%; n = 36), light red (7.8%; n = 49), white (8.1%; n = 51), light pink (8.3%; n = 52), reddish brown (8.9%; n = 56), medium pink (9.3%; n = 58), dark pink (10.2%; n = 64), magenta (17.2%; n = 108), and purple (19.5%; n = 122).

The majority of adult buprestids collected in 2001 multicolored test plots were in May (25.9%; n = 66), June (47.1%; n = 120), and July (24.7%; n = 63), while the majority of borers collected in 2002 multicolored plots were in April (39.6%; n = 86), May (35.0%; n = 76), and June (14.7%; n = 32). Adult buprestids collected in 2002 by red-colored-traps were predominately found in April (13.2%; n = 83), May (59.6%; n = 374), June (17.1%; n = 107), and July (6.7%; n = 42). Trapping at the University of Tennessee Arboretum in Oak Ridge resulted in the collection of 16 buprestids on red-colored traps and none on white-colored traps. Species that have been identified to date from 2001 and 2002 trap collections include *Acmaeodera tubulus* (F.), *Acmaeodera* spp., *Agrilus obsoletoguttatus* Gory, *Agrilus* spp., *Anthaxia* (*Haplanthaxia*) *quercata* (F.), *Anthaxia* (*Haplanthaxia*) *viridifrons* Gory, *Chrysobothris adelpha* Gem. & Harold, *Chrysobothris azurea*, *C. femorata* complex, *Chrysobothris pusilla* Gory and Laporte, and *Chrysobothris sexsignata* (Say). *Chrysobothris pusilla* is a new state report for Tennessee. Our conclusions from these studies are the colored sticky traps have considerable potential as a simple tool to monitor flatheaded borer flights.

SITE SPECIFIC PEST MANAGEMENT IN MISSISSIPPI

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Several insect pest species attack cotton in the Mid-South including thrips species, tarnished plant bugs, and stink bugs. These insects damage plants and limit yield and fiber quality and consequently, cotton has one of the highest insecticide loads of any row crop in the U.S. Several strategies for reducing insecticide applications are currently being developed including site-specific pest management which seeks to apply chemicals only where needed in the field. From 2000 to 2003, remote sensing technologies and site-specific management techniques were investigated for use in detection and control of these cotton pests in experimental and farm fields.

In late May and early June, thrips were found above economic threshold levels in weedy areas of the field which had high normalized difference vegetation index (NDVI) levels in remotely sensed imagery. An imagery based prescription spray map was generated which effectively controlled stink bugs, saving approximately 50% of an insecticide application.

In mid June, tarnished plant bug, numbers were greater in vigorously growing field zones with higher normalized difference vegetation index (NDVI) values than tarnished plant bug numbers in slower growing zones with lower NDVI values. Tarnished plant bug occurred at or above economic threshold levels in the majority of vigorously growing zones, but occurred at low levels in slower growing zones in mid June. The data indicate a potential preference by tarnished plant bug for vigorous plant zones. Imagery-based prescription spray maps were created for each field and site-specific applications were made in June that reduced applications of insecticide by about 25%-40%. In July, site-specific applications were applied again for tarnished plant bug control in both fields saving approximately 20%-25% of insecticide applications. In late season, NDVI values and tarnished plant bug numbers were lower in early maturing zones that had reached cutout or node-above-white-flower (NAWF) = 5 + 350 heat units (DD60s). In early August, an imagery based prescription application map was created that terminated insecticide use in cutout zones in a farm field, thus saving approximately 20% of an insecticide application.

In mid August, stink bugs reached threshold levels at sites that had grown rapidly in late season. An imagery based prescription spray map was generated which effectively controlled stink bugs, saving approximately 50% of an insecticide application.

Remote sensing was also used to monitor early-season wild host plants of tarnished plant bugs for use in an area-wide pest management plan. In remotely sensed imagery, broadleaf host plants of plant bugs were discernable from non-host grasses. Remote sensing could be useful for detectionof host plant material on an area-wide basis and could be used in vegetation management programs.

NEW AND INTERESTING UPDATES FROM THE PLANT PEST DIAGNOSTIC CENTER

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The plant and pest lab receives approximately 4000 samples each year. Plant and insect specimens are received by mail, walk-in clients and by digital images submitted from county agents. 3011 samples were received by mail and walk-in clients along with 962 digital samples from county agents. Over half of the samples were diagnosed with insect or mite related problems. 1662 samples were submitted from homeowner clients with 1349 samples submitted from commercial clients. Commercial clients consisted of orchards, nurseries, greenhouses, golf courses, farmers, and licensed commercial applicators. The most commonly reported plant pest were scale insects, mites, bark beetles, lace bugs and clearwing borers. Ants, spiders, bees/wasps, various pantry pests and flies were commonly reported homeowner pests. Two possible state records were submitted from commercial clients, the maple wood wasp (*Xiphydria maculata)* and a cerambycid (*Callidium violaceum).*

STORED GRAIN INSECTS IN TENNESSEE: A JOINT PROJECT WITH KENTUCKY

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Tennessee and Kentucky has entered into a join study on an effort to better provide grain producers with new and revised methods of storing

grain. Initial results of the first twoyears study indicated that using proper storage techniques were effective in reducing insect populations to allow one producer who participated in the study to market his grain without dockage by the buyer.

COMMON INSECT DEFOLIATORS OF ORNAMENTAL TREES AND SHRUBS

F. A. Hale
Agricultural Extension Service
University of Tennessee

Most common defoliators include lepidopteran caterpillars, sawfly larvae, and beetle larvae and adults. Scarab beetle defoliators include nocturnal feeding of May or June beetle and the more problematic daytime feeding of the Japanese beetle. The yellow poplar weevil and locust leafminer both have larval leafminer stages and adults that feed on the leaf surface. Several species of leaf beetles attack willow and poplar. There are many species of sawflies that feed on the foliage of rose, dogwood, oak, pine and other plants. In the fall of 1998, white pine trees were defoliated in Brentwood by the introduced pine sawfly. Some landowners cut the presumed dead trees down only to find out the following spring that neighboring trees had refoliated. In May 2002, hackberry, elm and oak in Nashville were defoliated by spring and fall cankerworms. Soon afterward, a new flush of foliage occurred and the old damage was no longer apparent. Common web producing caterpillars include the eastern and forest tent caterpillars and the fall webworm. Gregarious feeders such as the yellownecked caterpillar and the walnut caterpillar defoliate one branch at a time. The bagworm hatches from eggs in May and can defoliate trees by mid-summer. Other interesting caterpillars are the variable oakleaf caterpillar, a pest of oak and linden, the saddled prominent and the unicorn caterpillar.

ISOLATION OF NOVEL ANTIBACTERIAL PROTEIN FROM *HELIOTHIS VIRESCENS* (Fabricius)

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Immune hemolymph was collected from one-day old pupae of *Heliothis virescens* (tobacco budworm) after injection of live *Enterobacter cloacae*. Induction of antibacterial activity against *Micrococcus lysodeikticus* and *Escherichia coli* was greater in pupal than larval immune hemolymph. Heat treatment was employed as an initial purification step of the antibacterial protein. The antibacterial protein was separated along with lysozyme by gel filtration chromatography. The antibacterial protein was then isolated from lysozyme using sequential electrophoresis with a native acid gel and SDS-PAGE gel. The molecular mass of the antibacterial protein was determined to be 12 kDa. The N-terminal amino acid sequence of the 12 kDa protein was different from those of other antibacterial molecules found in insects. We named the novel antibacterial protein Viresin. Viresin showed antibacterial activity against several Gram-negative bacteria.

THE HISTORY AND IMPACT OF THE SCALE INSECTS ON SOCIETY

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Scale insects, including mealybugs, comprise a diverse group of insects within the superfamily Coccoidea containing more than 7,500 species worldwide. Most of these small plant-feeding insects are considered pests with several species capable of inflicting substantial economic damage. Economically, many species are important pests of fruit, nut, forest and ornamental trees, greenhouse and house plants, as well as several agricultural crops. Losses due to plant death and increased production costs are estimated to exceed five billion dollars annually worldwide with losses in North America approaching 500 million dollars annually. The most economically important infestations of scale insects are in cultivated plantings, nurseries, greenhouses, and other urbanized areas where ecological disturbances have occurred. Because of their small size and cryptic appearance, they often go unnoticed on the branches and leaves until a heavy infestation is present, which results in loss of plant vigor, dieback, leaf drop, fruit damage, or eventual death of the host plant.

Several species have been economically beneficial over the past centuries. Species of *Kermes* and cochineal scales were used as a dye source from antiquity to the present. Carminic acid is a natural red dye from

cochineal scales, a family of scale insects that feed on cacti. This dye has been used commercially worldwide since the 16th century and was the dominant dye source used in cosmetics, food, medicine, and textile products until its replacement by aniline dyes. The white waxy tests of the Chinese wax scale were used to make wax candles and figurines in China. Also, candles made from the tests of this species were used in religious ceremonies as a symbol of purity. Ground-dwelling margarodids, known as ground pearls, are collected and strung into bracelets and necklaces in several South American countries. For centuries, the secretions from lac scales have been processed into shellac and used to protect a variety of items including furniture, machinery, etc. Also, adult females of the giant scale, *Llaveia axin*, are processed for their "fat" content that is used as a lacquer coating on wood products, especially art and sculpture creations, in Mexico and Central America. The ornate pit scale, *Cerococcus quercus*, was used as a glue source and as a chewing gum by native American Indians of the southwestern U.S. In addition, a few species are used as biological control agents suppressing invasive weeds, such as some species of cochineal scales on cacti.

INSECTS IN THE CLASSROOM: TEACHING TOOLS OR PEST PROBLEMS?

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The presence of unwanted insects in the classroom may prompt many schools to initiate pest control tactics, but how can we change attitudes to encourage insects as 'wanted' tools in the classroom? Unfortunately, many teachers do not realize the potential benefit of insects as teaching tools. Insects, by nature of their vast numbers, physical structure, and diversity, offer a tremendous array of teaching opportunities to illustrate basic

biological, ecological, environmental, behavioral, and social principles. Because insects are widely available, easy to find, easy to maintain, and easy to handle, they make excellent inexpensive, popular teaching models in the classroom to fuel the curiosity and interest of young students. Although many teachers have a positive attitude about insects, they may lack the skills, knowledge, training, experience, and confidence to use them effectively in the classroom to illustrate science concepts and principles. We have conducted two week-long workshops to provide practical demonstrations, hands-on activities, teaching materials, lesson plans, and web-based materials to enable 55 K-4 teachers/science coordinators to integrate insects as teaching tools into the science curriculum of elementary schools in underrepresented, underprivileged, and underserved rural counties in eastern Tennessee. The need for this type of workshop was evident by the number of applicants, as 100+ teachers applied for only 30 slots in 2002 (and ca. 70 teachers remain on a waiting list).

Workshop activities were designed to alleviate teacher fears and enhance their confidence, knowledge, and skills (few K-4 teachers in rural counties have training with insects) by illustrating the many ways to use these insects to demonstrate biological and physical laws of science, expand problem solving, enhance observational skills, and stimulate student interest in science. At the conclusion of the workshop, participants received entomological supplies, resources, and materials valued at $350.00 to enable them to easily include insects into lesson plans and share their experiences with colleagues.

Pre- and post-workshop evaluations suggested that teachers, as well as their students and colleagues, benefitted greatly from this workshop, which should have a positive and long-lasting impact on the teacher's performance in the classroom and stimulate continuous improvement throughout the grade level and school. For more information about our workshop for elementary teachers, please visit *http://eppserver.ag.utk.edu/SummerWorkshop/*.

POSTER

A POPULATION GENETICS STUDY OF ESTERASE-4 AND BODY COLOR IN THE COTTON BOLL WEEVIL, *ANTHONOMUS GRANDIS*

C. L. Johnson, J. D. Drake, C. J. Biggers, and M. L. Beck

University of Memphis
Memphis, Tennessee

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the TES Summer Board Meeting
August 9, 2002

The Summer Board meeting was convened at the Ellington Center Extension Offices at 10:10 by President Steve Hamilton. Present were Haun, Powell, Hale, Murphree and Lentz. Minutes of the October meeting were distributed. The committee appointments were discussed. Several changes were to be made to the list included on the 'Post Meeting' minutes. Murphree (Hale seconded) moved that the minutes be approved without reading but with changes in the committees.

Powell presented the treasurer's report. TES spent more than it brought in at the last meeting due to reduced attendance. Skinner was asked to hold the speaker honorarium and expenses to $300. There will be joint participation with UT Department of Entomology and Plant Pathology. There are no more TES pins. There was discussion as to the making of pins. Lentz will check on the mold for making pins and the jeweler who made the pins. Hale (Haun seconded) moved that the treasurer's report be accepted. The motion was approved.

Hale gave the Local Arrangements committee report. The Drury Inn (Harding and I-24) will be the host hotel. The inn will provide a hospitality room for the mixer. There was discussion of the Mexican restaurant for

the dinner. Hale will check with the restaurant. Hale discussed the Ellington Ag Center maps that are available now. He suggested that the map be included in the call for papers. Haun will arrange rooms for the premeeting board meeting in the Holman building. Audiovisuals were discussed. LCD projectors will be used and Hale will provide. He will also arrange for screen and computer. Hale will check with Vail on a remote. The refreshments for the breaks were discussed. Hale will arrange for a lunch to be brought in. Haun mentioned the new commissioner, John Rose, may be available to welcome TES members. Skinner needs to be notified of Rose's participation. Hamilton will send a formal letter of invitation to Rose. Haun suggested that the speaker Caron fly into Nashville and Haun will transport him to Knoxville. It is much cheaper to do this. The cost of nonmembers registration fee was discussed. Some suggested a $10 fee be assessed. Haun (Hale seconded) moved that we charge the $10 fee for nonmembers for the one-day attendance. The beekeepers should be invited to hear the speaker. The motion passed. Murphree suggested we get a new registration poster made up. Hamilton will send a the logo to Powell. The call for papers will be mailed by Skinner. It will include the Caron bio, Vail's letter to the students, maps to the site, officers and committees, the call for papers and the TES brochure. Haun will work with Hale on getting the material out.

The call for student papers was discussed. The certificate was edited to delete the last two lines and increase the length of lines for President and Awards Chair. Also, the logo should be used as a water mark. Haun suggested that Williams be notified of the 'Harry Williams Award'. Vail and Skinner will contact Gerhardt for help on the plaques. Hamilton asked about raising funds for the reception. Shamiyeh, Lentz and Hale will contact industry representatives for support for the refreshments at the meeting. Hamilton will contact Skinner about the time for submission of student papers. Doris Caldwell has done the program in the past. Hamilton will contact Gerhardt about the plaques.

Publicity chair Murphree discussed the brochure. The meeting registration will be included on the brochure. Other revisions were presented to Murphree. The time lines of proclamation, press releases, etc. were determined. The publicity poster should have education/research, regulatory and industry portions. Members were encouraged to bring posters to the meeting. Hamilton will convey this to Skinner for the call for papers.

Haun presented the editorial report. Caldwell likely had not been paid during the 2001 year. Hale (Murphree seconded) moved that Caldwell

be paid the $200. The motion passed. Haun asked about Prediction/Evaluation reports for the 2001 season. Hamilton asked that renewal memberships be solicited in the call for papers. Lentz asked that the Firefly membership application be changed to send the renewal/new membership be changed to the Treasurer. The pins should not be mailed, but should be picked up at the meeting.

Constitution/Operations Procedures should include the timeline schedule. Haun asked about publishing the Firefly electronically. The general consensus was to go to a CD. The new awards will need to go in the procedures.

Membership Chair Grant was not in attendance.

Hamilton mentioned new officers who could be elected. The secretary, president-elect, and members at large were the most important. There is a need to recruit new potential officers.

The meeting adjourned at 12:30.

TENNESSEE ENTOMOLOGICAL SOCIETY

MINUTES OF THE PRE MEETING

BOARD OF DIRECTORS AND COMMITTEE CHAIRMEN

October 10, 2002

The meeting of the Board of Directors and Committee Chairmen held just prior to the Annual Meeting of the Tennessee Entomological Society by President Steve Hamilton. Present were Steve Hamilton, Steve Murphree (Publicity), Pat Parkman (Awards), Steve Powell (Treasurer), Frank Hale, John Skinner, Gray Haun, and Jerome Grant. The meeting was called to order by Hamilton at 10:44 a.m.

President's report:

The meeting seems to be coming together very well. The Commissioner of Agriculture, John W. Rose will give part of the opening remarks at the TES meeting this afternoon.

Reading of the minutes for August 9 board meeting:

The minutes were not read. All present did not have a hard copy of the meeting minutes, but President Hamilton thought they accurately reflected the meeting of August 9. A hard copy was circulated around the table to those present. Steve Murphree moved that the minutes be approved, Skinner seconded and the motion passed.

Treasurer's report:

Powell gave the report and noted that there was a missing item. Doris Caldwell has probably already cashed a check for $200 that isn't reflected on the statement passed out to the Board. Powell said that at the meeting October 2001, TES was approximately $500 in the red, but that the financial outlook for this year will probably be better. The Certificate of Deposit has earned 4.04% and seems like a good return in light of the market. Low attendance last year affected TES income. He suggested we keep more of the cash from the CD when it matures in August 2003 to prevent operating in the red. We had a $500 net loss last year. Hamilton asked about response to renewal notices, and Powell said that some people are paying dues early. He is optimistic that we will have more income this year but thinks we will probably have a $300 loss this year.

Hamilton asked how much we should keep in the account and Powell suggested we keep at least $2000 in the checking account at a minimum. Hamilton asked for comments, and then approval. Skinner moved that the Treasurer's report be approved, Frank Hale seconded the motion and it was

passed unanimously.

Committee reports:

Local arrangements -

We will eat at El Ranchero, the restaurant next to the Drury Inn at I-24 and Harding Place. A dining room for 50 is reserved. Frank told the restaurant to expect 25-30 people. At the last check, 16 rooms were registered for TES attendees at the Drury Inn.
Hale reported that Gene Burgess is bringing a cooler for ice and that he (Hale) bought drinks for the meeting breaks and for the mixer. Ice will have to be picked up. Skinner brought a PowerPoint Laptop projector and Hale has the slide projector and screen for slide presentations. It was noted that we still need a vcr for Grant's presentation. The setup in the Ellington auditorium is tables and chairs. Hale has a few more things to pick up before the meeting but thinks everything is ready to go, just need to do a little setting up. Poster board easels have been set up along the sides of the room for poster presentations.

Program-

Skinner tried to balance the program so that they could start on time and end on time, concluding at noon tomorrow. There are 18 talks. The poster was noted in the program where there is a 3:55 pm break. Skinner focused on keeping the program simple. He suggested that email addresses be added to the list of the Board and Committee members on the back of the program because it would be very handy.

Skinner would like to see more involvement in the meeting with more subjects covered. Skinner suggested that the TES membership do MORE than just 1 meeting a year. We should improve the way we get the word out and get more members and more attendance. The board should consider ways to increase the number of talks and attendees. Hamilton suggested we would see an increase in student papers particularly with the development of a Ph.D. program. Hale asked how increasing the number of talks would fit into the time allowed. Skinner said we would have to meet later into the evening on the first day.

Murphree mentioned the establishment of entomology week in Tennessee. Skinner suggested something like school kid entertainment, insect zoo things to attract local interest. Bug mobile sponsored by Orkin and the Smithsonian was suggested by Hamilton who said it would be good if it were here during the meeting. The 'Discovery' type museum in Murfreesboro might be a good place to have the van. Skinner said he would call them and see if they could come to the meeting or to the

Discovery museum next year.

How would we want our meeting to transpire around that event? Murphree suggested the 'event' occur the day before the meeting. Hale said we would need a separate committee to work on activities like that since that would require a lot of time and planning. He noted there is the possibility they could have some kind of event at the Ellington center.

Awards-

Pat Parkman represented Karen Vail who did not attend the board meeting. The Caron award winner this year (Pless) probably won't be here this year. The Caron award for last year will also be presented tomorrow. The Harry Williams award will be given by Skinner to a 4-H student, Kim Woodard, from Trousdale county. No seniors entered. Skinner put a picture of Ms. Woodard with the county agent from Trousdale Co. on the web site. She had an excellent project.

The awards will be given the business meeting. The student paper award will be given at the same time. Parkman asked if the paper award comes with a certificate in addition to the check. Those here agreed that would be a good idea. Murphree brought up the certificate of recognition and that there were some changes made to the certificate.

Publicity Chair report-

Murphree has the proclamation for entomology week from the state ready. It is legal size and very nice. Publicity committee wants to present it to Hale tomorrow and the proclamation will be left with President Hamilton so it can be given out tomorrow. Murphree has contacted newspaper and television about the meeting today and hopes some media will attend. He wants to work with the membership committee to work on a revised version of the membership application to mail out to prospective members.

He asked should he contact the media with a news release after the meeting. Hale thought we should send things to the paper after the meeting (regardless of whether they come to the meeting today and tomorrow) and he has a contact at the Tennessean that Murphree could send a release to. Murphree asked that he be reminded/encouraged to work on posters and publicity throughout the year.

Historian reports-

Hale said he would get archival things from Harry Williams and store them at the Ellington building and do some 'digitizing' of archival information

that we may make little booklets to give out.

Publication and editorial report-

Firefly: is a little smaller than some of the others. This one doesn't contain a copy of the constitution/bylaws and there were fewer papers. The cost for the issue before this one was $256 and he hopes this version will not be that expensive. Doris Caldwell is being paid $200 to compile the Firefly.

Powell said he wished he had reached out to more members in the western part of the state in terms of editorial content/editing.

Membership-

Grant apologized to the board members for his lack of input into the society in the past year due to family and health problems. He promised to be more focused this year. He thinks we need to reach more people for membership and he expressed concern that people thought that it wasn't worth their time to come to this meeting. He thinks TES should work hard to promote entomology across the state. He also wants to encourage new entomology hires to participate. He is interested in doing some sort of event that will help bring interest to the TES meeting the day before the meeting. He thinks working with teachers is very important.

He thinks we could get private funds to do workshops for teachers and help them with teaching supplies. We can easily accommodate a large number of people students and teachers if it is not a hands on, like ag day sort of thing. TES could put on a successful inservice if it were advertised so that it would be well attended. If it is hands on type training, you have to limit the number of people you bring in for training. He noted that there is also money available for minority teacher help.

Nominations-

Gerhardt not present, but Skinner said he knew that Gerhardt had been thinking about it and has talked to several other people on the committee.
Consitituition-

Little work has been done on the constitution and Hamilton said there are things that need to be worked on in the constitution. Haun said that he has 60 copies of the Firefly for this year.

Hamilton asked for any other old business.

Any new issues?

Skinner paid $168.50 to southwest for Dewey's airfare and needs to be reimbursed. UT entomology shares part of the expense for the speaker and funds are not always readily available. Skinner said he would hope that the society could pay all of the expense of getting a speaker. Hale noted that we need more industry support and that Bayer may help financially support the mixer.

It was noted that the call for papers and the first board meeting should go out earlier. More papers might be given if the call went out earlier and the board meeting comes at a bad time. There might be more time to get some things done if the meeting was scheduled for earlier in the summer. The board meeting being held earlier is not against the constitution. It is thought that if we can have the board meeting earlier we may be able to contact and encourage more industry people to attend and support the TES meeting. Murphree said we needed to continue to hold the meeting during fall break at UT

There was talk of having a poster competition in addition to paper presentations. Concern was expressed that a poster competition might take away from paper presentations. Hale mentioned the importance of this meeting as a 'getting your feet wet' place for students to present papers before going to regional and national meetings.

President Hamilton officially adjourned the meeting at 11:50 a.m.

Nancy Van Tol
For Gary Lentz
TES Secretary

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the TES Business Meeting
October 11, 2002

The meeting was called to order by President Hamilton at 8:45 a.m. in the Ed Jones Auditorium at the Ellington Center in Nashville. Secretary Lentz was called on to present the minutes. He moved that since these were published in the Firefly, that the reading be dispensed. The motion was seconded and passed.

The Treasurer's report was presented by Powell. A motion to accept the report was moved by Gerhardt and seconded by Skinner. The motion passed.

The Auditing report was presented by Youmans. The books were found in order.

The Awards committee report was presented by Parkman, but some of the report is continued later.

Haun indicated that the Constitution committee needs to do some additional work.

Hale on Local arrangements reported that the dinner was well attended.

Membership chair Grant reported on the committee activities. He expressed thanks to the committee. All TES members need to recruit. He spoke of the diversity of the group and the papers presented. He mentioned that the governor had made a proclamation that declared Entomology week.

The Nomination committee report was presented by Gerhardt. President-elect, Secretary and 2 Members-at-Large were the available positions. Lentz agreed to serve as secretary for another term. Members at large nominees were Cindy Williford Bilbrey and David Cook. Jason Oliver and Don Ourth were the nominees for President-elect. Gerhardt moved that the Secretary and Members-At-Large be elected and Haun seconded the motion. The motion passed. Election of the President-elect was conducted by ballot vote. The winner, Jason Oliver, was recognized.

The Prediction and evaluation report presented on p. 20 of the Firefly. Powell expressed appreciation for contributions. He thanked Gray Haun and Doris Caldwell for work on the report.

Program chair Skinner thanked all for attendance and participation in the meeting. He thanked the Board and Hamilton for direction. He thanked Mike Studer and Pat Parkman for their work. Hamilton thanked the chair for his work on the program.

Murphree presented a report at the meeting yesterday on publicity. He mentioned the reports at Belmont. The brochure is being updated and sent out. He is currently trying to get the logo out to become more visibile. He requested digital images be sent to him so more information could be distributed.

Publication/Editoral committee chair Haun thanked Doris Caldwell for her work on the Firefly. Steve Powell contributed and Lynn Snodderly also

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The Awards were presented at this time. The Richard E. Caron award from 2001 was presented to Dr. Harold Bancroft from the University of Memphis. Biographical information on Dr. Bancroft was presented. Dr. Bancroft expressed his appreciation for the recognition of the award and paid special tribute to Dr. Caron. The 2002 award winner named is Dr. Charles Pless. Biographical information was presented on Dr. Pless. The award will be presented at a future date. The winner for the best student paper was Debra Hoyme. Dr. Skinner presented the Harry Williams Award to the 4-H winner from Trousdale Co., Kim Woodard.

President Hamilton asked for old business. There was none. He asked that Past Presidents escort President-elect Skinner to the podium. Hamilton presented the gavel to incoming President Skinner. President Skinner presented a plaque of appreciation to outgoing President Hamilton. Dr. Skinner declared the meeting adjourned.

Gary L. Lentz
TES Secretary

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the Post Meeting Board of Directors Meeting
October 11, 2002

The meeting was convened at 12:45 by TES President Skinner. The meeting location for Nashville was presented as a primary option for the 2003 meeting. Hale was asked to serve as Local Arrangements chair. The advantage for this location is the reduced cost. Other locations can be done at a reduced cost. Skinner felt this was the best option. He would like to see an increased participation from industry. He talked with Lee Greer who will work with industry representatives to attempt to increase participation.

Skinner asked the Board to go over the committee chairs.

Auditing Committee: Youmans, Parkman and Hale (with Youmans as chair).

Nominations Committee: Gerhardt, Bancroft, Snodderly and Burgess.

Awards Committee: Vail, N. Youssef, Skinner, Murphree and Lambdin.

Prediction/Evaluation Committee: Powell, Oliver, Stewart and Patrick.

Constitution Committee: Burgess, Haun and Hamilton.

Program Committee: Oliver, Ourth and Skinner.

Local arrangements Committee: Hale, Snodderly, Powell and Cook.

Publication Committee: Haun, Snodderly, Lambdin and Bilbrey.

Membership Committee: Grant, Nadeer Youssef, Youmans, Bancroft and Biggers.

Publicity Committee: Murphree, Grant, Bilbrey and Haun.

Grant wanted to do some activity with children. The building would have to be available from 9-5. An activity would have to be done the day before the meeting. The home school crowd might be one to look at. They would not be restricted by insurance. Skinner suggested the establishment of the Activity Committee. Grant's activity at UT might be available. Skinner could bring hives, Cook could have display of insects. The maximum age/grade should be no more than 5th, but 2nd should be the lowest. Skinner asked that Grant work with him. Haun suggested having it in a school, but there is too much problem having little time to set up. Home school groups have more varied ages and bring a mix of questions. Skinner wanted to go with 2,3 and 4th graders. All the agencies and universities agreed to be involved.

The meeting will be set at the fall UT break for 2003. The group will be notified as soon as the date is determined. The activity will be planned for

the day before. The activity will have to go 9:30 – 1 pm with around 12 stations.

Skinner suggested that the board meeting be held in May rather than the August date. The meeting will be held in the extension offices.
The meeting was adjourned at 1:20 p.m.

Gary L. Lentz
TES Secretary

TENNESSEE ENTOMOLOGICAL SOCIETY
Treasurer's Report
October 2001 – October 2002

Books and Records audited by Auditing Committee (Clete Youmans, Chair)

Balance on Hand 10-01-01

Checking	$2018.47
Certificate of Deposit	$3045.48
TOTAL ASSETS	**$5063.95**

DISBURSEMENTS

Kenneth Davenport– Student Award	($75.00)
Lynn Snodderly– Firefly Publication for 2000 meeting	($256.50)
Lynn Snodderly- Tax on Firefly minus Regular Dues	($16.16)
Karen Vail – 2 Plaques	($64.95)
Steve Murphree – Sign Center ($71.44) + Kinkos ($43.83)	($115.27)
Steve Hamilton	($5.60)
Plus Club Dues	($60.00)
John Morse – Honorarium	($500.00)
TOTAL EXPENSES	**($1093.48)**

INCOME

19 Registrations	$380.00
20 Regular Dues	$100.00
1 Corporate Due	$25.00
Student Dues	$6.00
Donations	$25.00
5 Pins	$50.00
Checking Account Interest	$4.24
TOTAL INCOME	**$590.24**

Balance on Hand 10-10-02

Checking	$1395.23
Cash	$120.00
Certificate of Deposit	$3170.74
TOTAL ASSETS	**$4685.97**

NOTE: CD # 5328641582, issued 3/12/99, matured on 3/11/01. The amount was 3045.48. CD # 5328920538, issued 8/08/2001, will mature on 8/08/2003. The current value is 3170.74. The interest rate is 4.04%. Interest payments are made quarterly.

Respectfully Submitted, Steve Powell, Treasurer

ATTENDANCE ROSTER OF THE 2002 ANNUAL MEETING OF THE TENNESSEE ENTOMOLOGICAL SOCIETY

MEMBER	AFFILIATION	LOCATION
	Regular Members	
Bancroft, Harold	Univ. of Memphis	Memphis, TN
Biggers, Charles	Univ. of Memphis	Memphis, TN
Bilbrey, Cindy	TN Dept. Of Agri.	Nashville, TN
Bogard, James B.		Nashville, TN
Burgress, Edward (Gene)	Univ. of TN (retired)	Knoxville, TN
Burton, Willodean D.S.	Austin Peay St. Univ.	Nashville, TN
Cook, David	Univ. of TN	Nashville, TN
Dunn, Joe C.		Nashville, TN
Gerhardt, Reid	Univ. of TN	Knoxville, TN
Grant, Jerome	Univ. of TN	Knoxville, TN
Hale, Frank	UT Ag. Ext.	Nashville, TN
Hamilton, Steven W.	Austin Peay St. Univ.	Clarksville, TN
Haun, Walker G. (Gray)	TN Dept. Agri.	Nashville, TN
Jackson, Kelly	Univ. of TN	Jackson, TN
Kauffman, Bruce	TN Dept. of Agri.	Nashville, TN
Lambdin, Paris	Univ. of TN	Knoxville, TN
Lentz, Gary L.	Univ. of TN	Jackson, TN
Moore, James P.	Vector Sci. Consortium	Omaha, NE
Murphree, Steven C.	Belmont Univ.	Nashville, TN
Oliver, Jason B.	TSU Nursery Crop Res. Sta.	McMinnville, TN
Ourth, Donald D.	Univ. of Memphis	Memphis, TN
Parkman, J. Patrick	Univ. of TN	Knoxville, TN
Patrick, Russ	Univ. of TN	Jackson, TN
Primus, Jim	Vanderbilt Univ.	Nashville, TN
Sanders, David M.	Univ. of Memphi	Memphis, TN
Skinner, John A.	Univ. of TN	Knoxville, TN
Snodderly, Lynn	TN Dept. of Agri.	Knoxville, TN
Stone, William F.		Rossville, GA
Sudbrink, Jr., Donald L.	Miss. St. Univ.	Stoneville, MS
Vail, Karen	Univ. of TN	Knoxville, TN
Van Tol, Nancy	Univ. of TN	Jackson, TN
Williams, Harry E.	Univ. of TN (retired)	Knoxville, TN
Youssef, Nadeer	TSU Nursery Crop Res. Sta.	McMinnville, TN

Student Members

Bailey, Derek	University of Tennessee	Knoxville, TN
Bryant, Laura	University of Tennessee	Knoxville, TN
Buck III, Stanly Car (Lee)	University of Tennessee	Knoxville, TN
Caldwell, Nathan	University of Tennessee	Knoxville, TN
Drake, Jay	University of Memphis	Memphis, TN
Fluker, James P.		Hendersonville, TN
Hoyme, Debra P.	University of Tennessee	Knoxville, TN
Johnson, Candice	Univeristy of Memphis	Memphis, TN
Kovach, Amy L.	University of Tennessee	Knoxville, TN
Morton, Joey	University of Tennessee	Knoxville, TN
Stanich, De'Jun	University of Tennessee	Knoxville, TN

Sustaining/Corporate Members

Greer, Lee	Valent	Dunlap, TN
Youmans, Clete	BASF	Dyersburg, TN

BOARD OF DIRECTORS

President - Steven Hamilton
Past President - Gray Haun
President Elect - John Skinner
Secretary - Gary Lentz
Treasurer - Steve Powell
Editor - Gray Haun
Historian - Frank Hale
Member-at-Large - Frank Hale
Member-at-Large - Ray McDonnell

COMMITTEES: 2001 - 2002

AUDITING
Clete Youmans, Chair
Frank A. Hale
Gary Lentz

AWARDS
Karen Vail, Chair
Steve Murphree
Joe Schiller
John Skinner

CONSTITUTION/OPERATIONAL PROCEDURES
Gray Haun, Chair
Joe Dunn
Gene Burgess
Steve Powell

LOCAL ARRANGEMENTS
Frank Hale, Chair
David Cook
Larry Latson
Steve Powell

MEMBERSHIP
Jerome Grant, Chair
John Skinner
Clete Youmans
Joe Schiller
Don Ourth

NOMINATING
Reid Gerhardt, Chair
Paris Lambdin
Lynn Snodderly

PREDICTION/EVALUATION
Steve Murphree, Chair
John Skinner
Cindy Bilbrey

PROGRAM
John Skinner, Chair
Ray McDonnell
Jason Oliver
Russ Patrick

PUBLICATION/EDITORIAL
Gray Haun, Chair
Lynn Snodderly
Ray McDonnell

PUBLICITY
Steve Powell, Chair
Ken Copley

Tennessee Entomological Society

Prediction and Evaluation

Committee Report

October 13, 2002

Steve Powell - Chair
Committee Members:
Ken Copley
Bruce Kaufman
Russ Patrick

Forest Insect and Disease Highlights 2002

For the second year in a row, an extended growing season occurred. Following a dry period which intensified from August to September primarily east of Nashville, the rains came statewide from October through December. Some hardwoods and understory shrubs came out of a drought-induced dormancy to put on fall growth or maintain their green leaves (such as some southern red oaks) through part of December in parts of East Tennessee. These growth changes make the forest more susceptible to spring frost problems. West Tennessee had abundant rainfall throughout the year with excessive wetness damaging some agricultural and tree nursery crops in late summer and early fall. The state nursery in West Tennessee undercut willow and water oaks some of which were then infected by **Pythium and/or Phytophthora** root rot coming through water-saturated soils. One Middle Tennessee nursery reported **Phomopsis** and **Fusarium** stem cankers on cucumber magnolia seedlings this fall.

Black turpentine beetles continued at high levels in scattered locations of West, southern Middle and East Tennessee. **Ips beetles** remained a problem on white pine in northern Middle Tennessee and on southern yellow pines in northern West and Middle Tennessee in scattered locations with spots up to 20 trees. These beetle population increases together with higher levels of pine sawyers help to regulate southern pine beetle populations by causing greater competition for inner bark tissue high in nutrients.

Speaking of **southern pine beetle (SPB)**, a tremendous cost in SPB cleanup has occurred since 2000 in public recreation areas. State, federal and municipal lands with dead pines had overworked local personnel cutting 100 foot buffers along secondary roads and trails in addition to hazard trees near buildings and in campgrounds. TDA, Forestry Division estimates that over 43,000 acres of pine recreational land have been killed since 1998 outside of the Cherokee National Forest.

In 2002, 58 counties had **SPB** activity with 45 counties classified in outbreak status. There were over 6,300 infestations statewide with over 21 million dollars worth of timber killed. In 1999, the forest inventory analysis classified over 985,000 acres of pine to be susceptible to SPB. Over one third of this total (385,000 acres) have been killed to date on state and private land, a loss of over 380 million dollars. Nearly 80 percent of the pine volume killed on non-industrial private land was in the 41-80 year age class. The Cherokee National Forest has estimated 60,000 acres killed. Both the number and size of **southern pine beetle spots** were reduced

statewide because there were no major infestations west of Nashville. Beetle populations were also reduced in the Tennessee Valley and areas north of I-40 in East Tennessee. Now most activity centers in the Blue Ridge Mountains south of I-40 at elevations above 1500 feet, on the southern Cumberland Plateau and in southeastern Middle Tennessee. White pine infestations were more common in sawtimber-sized stands on ridge tops and upper and middle slopes or in the upper reaches of watersheds where water deficients were more severe. These infestations usually occurred following one or two years of SPB buildups in neighboring southern yellow pine stands.

With cold mid-May temperatures suppressing leaf development, **spring cankerworms** caused heavy defoliation of hundreds of hackberries in Davidson and Sumner Counties. Light to moderate defoliation occurred on white oak when **unidentified leaf rollers, leaf tiers and inchworms** in scattered locations in northern East Tennessee (Scott, Union, Washington, Campbell Counties) and the Cumberland Plateau (Cumberland County) were in concert with the **common oak moth and variable oak leaf caterpillars**. Light to moderate defoliation was detected on the western Highland Rim (Hickman, Humphreys Counties) and Middle Tennessee (Wilson County) possibly due to the common oak moth, leaf tiers, leaf rollers and inchworms on white, post, chestnut, and black oak, ash and hickory.

Squirrel activity pulling off white oak outer bark with their feet and pushing it off with their noses caused small piles of bark at the base of trees in northern West Tennessee and scattered throughout East Tennessee. Increased foraging or/ and objections to **common oak moth caterpillars** resting under bark flaps caused removal of up to 50 percent of the bark of white oaks in some stands in West Tennessee.

Saddleback caterpillars (pack saddles) were more numerous in one northern Middle Tennessee county (Wilson) on sycamore causing light defoliation. **Maple petiole borer** infestations caused up to one third defoliation of urban sugar maples in Knox and Davidson Counties. **Asian woolly hackberry aphids** moved up into northern Middle Tennessee counties on hackberry from lower Middle Tennessee and East Tennessee counties along the southern border including Chattanooga. Their heavy feeding and secretions caused much **sooty mold**. Some **Asian ladybug** feeding was observed on the aphids in Davidson County. An upswing of **white pine aphids** and **sooty mold** from last fall continued into the spring in northern Middle Tennessee counties. Loblolly pine seedlings in West Tennessee (Henry County) and yellow poplar and other hardwoods in

East Tennessee were also infested with a more numerous **aphid** population.

Nantucket pine tip moth generations were extended to four for the second consecutive year in northern Middle Tennessee (first emergence was April 12) due to a hot, dry August and September and a mild, rainy fall. Infestations increased in scattered locations in Middle and East Tennessee (up to 60% of seedlings damaged on 1 to 3 year loblolly and shortleaf pine) while remaining steady at higher levels in West Tennessee. **Seedbug** damage increased to an estimated 378 pounds of loblolly pine seed and 8 pounds of white pine seed. No **coneworm** damage was noted.

The **Carolina mantid's** normal egg-laying period at the end of September in northern Middle Tennessee (Wilson County) was two to three weeks later (mid-October) this year. Egg production was average for this year. Over 1500 **fires** damaged more than 14,000 acres statewide in 2002 (a reduction in acreage over recent years). The average fire loss per year is 35,000 acres. Still at a cost of $150 per acre, fires caused over 2 million dollars in damage this year.

Loblolly pine sawfly defoliation over 50 percent continued on scattered loblollies primarily in northern Middle Tennessee. New locations popped up but trees defoliated last year were seldom infested. **Virginia pine sawfly** defoliation was down in northern Middle Tennessee in one Christmas tree plantation in Wilson County. **Red-headed pine sawfly** defoliation was on the increase on two to three year old loblolly pine in scattered locations in Middle and West Tennessee in these latter regions. Over 50 percent defoliation occurred in 10 to 30 percent of the trees. Minor damage was present in East Tennessee. **Introduced pine sawfly** infestations on white pine in one Middle Tennessee county (Putnam) had significant parasitism. This insect continues to be a major defoliator of urban white pines in the Nashville area.

A twig pruner possibly *Anelaphus villosus* was active on urban red and sugar maple and hickory in Hickman County. Increasing **reproduction weevil** populations (**pales weevil** and others) caused 45 to 85 percent mortality on 207 acres of loblolly pine in West Tennessee (McNairy County/lesser mortality in Carroll). Seedling mortality was worse where larger pine tracts that have been recently sold to pulp and paper companies were cut after May, 2002. Some lesser damage was reported on the northern Cumberland Plateau.

Of the 1,630 **gypsy moths** caught statewide, 1,486 were trapped in Campbell County in an area north and east of the area of the 7,930 acres sprayed twice this past spring with Btk. In the spray areas, there was a 97% reduction in the number of moths trapped (160 moths in 2002/6,675 moths in 2001). There will be a spray proposal of 16,000 acres to be sprayed twice with Btk in 2003. In other areas of the state in 2002, 11 moths were trapped in a 6 county area in northeast Tennessee; 118 were trapped in a 7 county area near Knoxville; 2 were trapped in a 2 county area near Chattanooga and 11 were trapped in a 2 county area near Nashville. Of the other 4 infestations in the state, only the Monroe County area will require ground spraying. Infestations in Scott, Sevier and Wilson Counties will require the same trapping as 2002.

The **hemlock woolly adelgid** has been found in Blount and Sevier Counties in the Great Smoky Mountains National Park. It has been located on private land between Pigeon Forge and Gatlinburg and on the Cherokee National Forest in Dennis Cove Campground in Carter County. A release of ladybugs from China in the National Park has been undertaken in the inaccessible sections of the area. **Pine bark adelgids** on white pine continued to be a problem in Middle and East Tennessee. The **balsam woolly adelgid** caused decline of older Fraser fir in northeastern Tennessee.

Oak wilt flights over Lincoln, Franklin and Marion Counties were negative for the disease in 2002. **Mimosa wilt** was reported in Chattanooga and Pickett County. **Pitch canker** continues to infect shoots of scattered shortleaf and Virginia pine saplings in East Tennessee.

Oak decline and mortality was reduced in West Tennessee following above average rainfall. However the majority of Middle and East Tennessee counties had stable or increasing levels of this disease (up to 5% mortality) particularly on west/southwest-facing slopes where hickory as well as red (black and scarlet) and white oak were affected. Below average rainfall occurred in East Tennessee for the majority of the growing season. Middle Tennessee and the Cumberland Plateau were dry mainly in late summer.

Other tree species such as ash and red cedar (southern Middle Tennessee) also suffered **drought-related branch cankers, decline or mortality**. **Hypoxylon canker** was prevalent in Middle Tennessee and East Tennessee. Yellow poplar and sugar maple were also sensitive species for decline in the Middle Tennessee area (up to 5% mortality of sugar maple west of

Nashville). **Sycamore decline** was more common in East Tennessee. **Nectria canker** of yellow poplar was more common in southeastern Middle Tennessee following the last four droughty years. **Leucostoma canker** of spruce and cherry were also reported and possibly **Botryosphaeria** canker of sweetgum in East Tennessee was seen more frequently. **Bacterial leaf scorch** of pin oak in urban areas of central Middle Tennessee was on the increase.

Hardwood branch damage by Brood 23 of the **13 year cicada** was widespread in the eastern portion of West Tennessee, lessening in intensity closer to the Mississippi River. Throughout the area generally less than 50% of tree terminal branches were killed with some heavy localized damage close to the Tennessee River (Decatur, Henderson Counties). One Middle Tennessee county (Hickman) had this brood reported for the first time.

The **exotic beetle *Callidium violaceum*** was found boring in the shoots of yew in the Nashville area. This species is common to the Northeastern U.S. where it was introduced from a foreign country. One report of a **red borer** infestation in the Nashville area was made in addition to **white oak borers** in a declining oak.

Tornadoes were numerous throughout the state in November. Most woodland damage reported thus far involved some East and Middle Tennessee counties (over 650 acres Morgan County, 350 acres Bedford County, 500 acres in Coffee County over 10 miles, 1565 acres in Cumberland County over 9 miles, 200 acres Anderson County, 313 acres Van Buren County over 6.5 miles including 174 acres on Fall Creek Falls SP). **Hail** also caused partial defoliation and twig cankers on white pine in one northern Middle Tennessee county and in Sullivan County. **Straight line winds** damaged small areas of four Cumberland Plateau counties (over 5 acres).

A late May **frost** moderately affected hardwoods on the southern Cumberland Plateau. A similar frost in Carter and Unicoi Counties in Northeast Tennessee damaged new shoots of Fraser fir Christmas trees to the extent that many trees were withheld from market when combined with the poor growing conditions due to the **drought**.

There were some areas of increased defoliation by the **eastern tent caterpillar** statewide, but most locations had more widespread light to moderate damage. **Fall webworm** infestations were more widespread

statewide, although at less than 50 percent defoliation levels on persimmon, sourwood, walnut, hickory, cherry and oak.

Orange-striped oakworm reports were up in the northern half of East Tennessee on white oak and red oak with one third or less defoliation. **Locust leaf miners** caused light to severe damage to Middle and East Tennessee black locusts. Damage was not as widespread as previous year. Some white oaks were lightly infested with **jumping oak gall** in northern Middle Tennessee.

Sycamore anthracnose was reduced in incidence statewide and caused up to 20% leaf drop on the lower crown in northeastern Tennessee with minimal twig damage. **Oak anthracnose** was up in a few West and East Tennessee counties on poorer sites infecting white, blackjack, post and water oak. **Ash anthracnose** was lighter than normal in Middle Tennessee. **Dogwood anthracnose** caused leaf spotting of mature leaves (less than 50%) in East Tennessee. Disease severity was reduced due to dry conditions.

Eriophyid mites caused noticeable widespread leaf curling on southern red oak in two West Tennessee Counties (Madison, Fayette). **Yellow poplar weevil** infestations were higher than normal north and west of Knoxville in the Tennessee River Valley and the Cumberland Plateau. The late May generation caused widespread leaf browning on over 20,000 acres mostly under 50 percent defoliation. Additional reports came from the southern Cumberland Plateau and northern Middle Tennessee in areas where the weevil is not normally seen. **Bagworm** populations were up in localized locations in Middle and East Tennessee on red cedar. Some white pine Christmas tree growers will increase their sprays for this insect in Middle Tennessee next year.

Ice in a few northern Middle Tennessee counties caused light branch breakage of sawtimber-sized white pine, loblolly pine, red cedar and magnolia in December. The 1994 storm which caused up to one third upper crown damage of mature yellow poplar and red oak in northwest Middle Tennessee caused a tenth to one half inch reduction in growth with much sprouting but no decay. **Walkingstick** infestations were light in Middle and East Tennessee. **Beaver** flooded one road in northeastern Tennessee and 20 acres of hardwoods in northwestern Tennessee. Light to moderate **pine webworm** defoliation was reported on shortleaf and loblolly pine seedlings north and east of Knoxville in the Tennessee River Valley and on the southern Cumberland Plateau.

Powdery mildew infections of dogwood began in July in East Tennessee with 20 percent of the crowns affected. **Slime flux** on white oak was reported in northern Middle Tennessee and southern Cumberland Plateau. **Elm phloem necrosis** was widespread in northwestern Tennessee, while **Dutch elm disease** remained at low levels statewide.

Asian lady beetles were more widespread in some Middle Tennessee counties (Sumner, Marshall, Montgomery, Humphreys) but down in areas of previously high populations in northern Middle Tennessee. **Indian wax scale** on hemlock was more commonly reported in the Chattanooga area due to publicity on the hemlock woolly adelgid. **Tulip tree scale** and **sooty mold** problems were reported in West and northeastern Tennessee. **Fall armyworms** marched into a garage from surrounding lawns in north Nashville. Heavy lawn damage was reported in Williamson County. **White pine weevil** damage was light on the northern Cumberland Plateau. A **grass-carrying wasp** was more frequently found in the window tracks of homes in the Nashville area this year. Their young feed on tree crickets in these nests made of grass.

White pine root disease (Leptographium) was higher in some Middle Tennessee locations, while remaining the same scattered mortality in East Tennessee. Needle diseases increased this year on southern yellow pine in West Tennessee and Cumberland Plateau with **pine needle rust** of smaller seedlings killing some trees in West Tennessee. **Needle cast and brown spot** were more prevalent on pines in West Tennessee and southern Middle and East Tennessee including white pine Christmas trees. **Ozone** damage was light to moderate on white pine in the southern Cumberland Plateau.
Grasshoppers increased in one northern Middle Tennessee County (Wilson) due to late summer dryness. **Lacebug** populations on oak and sycamore were reduced to a scattered trees statewide. **Cottonwood borers** heavily infested a hybrid poplar stand five years of age (4 inches in diameter and 20 feet tall) in Anderson County causing stem breakage. **Boxelder bugs** continued at high levels in scattered locations in Middle and East Tennessee. A **cypress midge** (Taxodiomyid) **gall** was common in one location in Carroll County on bald cypress. The **woolly ash aphid** and **ash whitefly** were reported on ash in Carter County.

Voles killed 10 to 45 percent of loblolly pine seedlings over 70 acres in southern Middle Tennessee (Lawrence County). **Deer browse** was

common on one acre of white pine in northeastern Tennessee. **Deer rub** was routinely seen in northwestern Middle Tennessee on 1 to 2 inch hardwoods and cedars.

TENNESSEE COOPERATIVE GYPSY MOTH PROGRAM

2002

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Executive Summary

Traps

A total of 14,606 traps were placed in Tennessee for gypsy moth in 2002, including 2,238 eradication, 11,624 detection and 744 delimiting traps.

Moths

A total of 1,630 moths were caught in 2002 in 18 counties (see attached map). This total reflected a decrease in the number of moths caught in comparison to 2001 (6,798 moths).

Table 1. Gypsy Moth Trap Catches – 1992 through 2002

	Total Catch Areas	New Catch Areas	# Moths	# Moths/Area	# Traps	Program Costs
1992	36	23	227	6.3	8,376	$287,520
1993	53	41	4,654	87.8	9,662	$235,240
1994	63	44	1,304	20.7	13,101	$662,000
199	75	56	295	3.9	19,36	$815,486

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1996	49	45	2,549	52.0	18,279	$324,558
1997	53	40	221	4.0	18,369	$431,901
1998	60	44	397	6.6	19,406	$286,904
1999	41	33	159	3.9	19,755	$530,845
2000	51	40	127	2.5	16,038	$372,000
2001	58	47	6,798	117.2	16,282	$372,000
2002	79	68	1,630	20.6	14,606	$742,000

Eradication Sites

Five areas are currently infested in the state as of September 2002. In Campbell County (Stinking Creek), 27,500 egg masses were sprayed with soybean oil on 30 acres and 7,930 acres were treated twice aerially with Btk in May 2002. An area of 16,000 acres is proposed for two applications of Btk in May 2003. The 2002 treatment reduced the moth population to 1,486 (6,659 moths in 2001) with 97 percent control within the spray block. Unfortunately moths blew out one to five miles to the north and northeast of the 2002 treatment, necessitating the 2003 proposal. In Monroe County after mist blower treatments of one acre with diflubenzuron and Btk and with mass trapping, moth catches dropped (2 moths in 1 trap) (29 in 2001). Further ground treatments and mass trapping are planned in May 2003. A new infestation was found in January 2002 in Wilson County in Middle Tennessee. Five egg masses were removed (3 were infertile) and mass trapping caught eight moths (a reduction from 14 in 2001). A female moth and 4 egg masses (3 spent) were removed in July 2002. Mass trapping is planned in May 2003. Five egg masses were sprayed with soybean oil in Scott County in February 2002 and a mist blower treatment with Btk on one acre was conducted in May 2002. No moths were caught for the first year (16 in 2001). Sevier County (near Pigeon Forge) also had zero moths for the first year (1 in 2001). Cumberland County (Elmore Road) had no moth catches for the second year and is considered no longer infested.

Tennessee Cooperative Gypsy Moth Program – 2002

Report covering all aspects of the program

Egg Mass Surveys

Egg mass surveys were carried out at four locations in four counties during the winter of 2001-2002 (Campbell, Monroe, Scott and Wilson). Over 50,000 egg masses on 30 acres of predominately river birch forest were found in Campbell County (Stinking Creek). Four personnel with backpack pumpers treated over half of the eggs (27,500 egg masses). In Scott County, five egg masses were sprayed on a river birch with soybean oil following their discovery this past winter. Five egg masses were removed in Wilson County (three were infertile) in January 2002 from a cider press near a popup camper from Michigan, and another five were scraped off a willow in July (four were spent) along with a female moth. No egg masses were recovered in the Monroe County survey.

Eradication Sites

A total of 2,238 traps were placed in six eradication sites in 2002 totaling 263 square miles. These traps caught 1,390 moths (6,705 moths in 2001). Three areas were sprayed from the ground twice in May 2002. Burlap banding was placed in one area. Mass trapping occurred on three sites.

Following aerial treatments in 1999 in Scott County (Huntsville), a ground treatment with Btk sprayed twice was conducted over one acre in May 2002. No moths were caught in the area (16 in 2001), so trapping will remain at 1 square mile (36 traps/square mile plus mass trapping).

After an aerial treatment of 7,930 acres twice with Btk in May 2002 (Campbell County, Stinking Creek), a total of 1,486 moths in 449 traps were caught primarily north and east of the 2002 spray block (6,659 moths in 2001). In addition, 101 moths in Claiborne County (2 in 2001) and 9 in Union County (4 in 2001) are thought to have blown out of the infested area. Three locations (122 acres, 13,480 acres and 2,232 acres) are proposed for treatment using Btk sprayed twice in May 2003. Burlap banding will also be placed in addition to mass trapping. A 335 square mile area is proposed for trapping (1-16 traps per square mile) in this steep, mountainous county.

No moths were caught for the second consecutive year in Cumberland County (Elmore Road). The gypsy moth has been eradicated from this

area.

In Sevier County (near Pigeon Forge), no moths were caught for the first year (1 moth in 2001). Grid trapping will be conducted (36 traps per square mile) over one square mile next year in addition to mass trapping.

A reduction in moths (2 moths vs. 29 in 2001) occurred in Monroe County (near Tellico Plains) following mist blower treatment on two acres sprayed twice with diflubenzuron and Btk in May 2002. Additional ground treatments with diflubenzuron next year will be undertaken. Mass trapping will be continued. Grid trapping will be similar to 2001 (150 traps) over 5 square miles (16-36 traps/square mile).

In Wilson County, eight moths were found in eight traps (14 moths in 2 traps in 2001). Grid trapping will be similar to 2002 (16 traps/square mile plus mass trapping).

Trapping

TDA Regulatory Services (TDARS) and USDA APHIS PPQ provided assistance with three ground treatment locations. TDA Forestry (TDAF) hired 21 individuals through two USDA APHIS PPQ cooperative agreements to trap four existing infestations (Cumberland, Monroe, Sevier and Wilson Counties) and urban areas (1 trap/square mile), campgrounds, mobile home sites and sawmills (selective trapping rates) statewide. In addition, they delimited 53 sites covering 53 square miles. TDAF hired an additional 11 persons under an agreement with the USDA Forest Service (USDAFS) to delimit existing infestations in Campbell and Scott Counties (244 square miles). An additional seven persons were hired by TDAF with state money to do detection trapping. TDAF under a cooperative agreement with USDA APHIS PPQ trapped one half of each of 65 counties in the state at the rate of one trap per four square miles. Other cooperating trapping agencies include USDA Forest Service, USDI National Park Service, Tennessee Valley Authority, US Corps of Engineers, US Army, USDI Fish and Wildlife Service, US Air Force and US Department of Energy. They placed 343 traps of the state detection trap total.

Detection Site Trapping

A total of 11,624 traps were placed in 2002 to discover introductions of the gypsy moth into the State. These traps caught 231 moths, a total greater than 2001 (58 moths). The state had more introduction sites (64) this year than last (47). Over two-thirds (70) of the 95 counties in the State had at

least one moth trapped in them since the first moths were caught in 1972 in Cocke (1 moth) and Sevier (1 moth) Counties. There were no new county finds in 2002.

Nineteen (19) sites caught multiple moths per trap (73 moths). Eighteen (18) locations (all Claiborne County) were in ten urban grids (1 trap/square mile) and eight rural grids (1trap/4 square miles). One location (Sullivan County) was in a campground.

Delimiting Site Trapping

A total of 744 traps were placed in 53 delimiting sites in 2002 (5-16 traps/square mile). These locations evaluate sites where the gypsy moth was found in 2001 but was not established (no other life stages were found). Eight (8) areas were positive with 9 moths caught in a total of 7 square miles (14 sites/62 moths in 2001).

One multiple catch in Union County caught two moths with the rest of the catches in Claiborne, Davidson, Jefferson, Sevier and Union Counties. In 2003, 74 sites are proposed for delimiting trapping. Five (5) of these locations in Claiborne County will be handled as part of the Campbell County infestation in Stinking Creek. One area in each of three counties (Campbell, Wilson and Monroe) will have egg mass surveys during the fall and winter of 2002-2003.

Eradication Site Trapping

Five sites will be trapped in 2003 involving 341 square miles where gypsy moths were caught and the insect was established (two or more life stages of the gypsy moth present). Additional sites may be added, pending the results of the egg mass surveys.

HISTORICAL NOTES

Presidents of the Tennessee Entomological Society (1973 - Present)

President	Term	Affiliation
Mendell Snodgrass	'73 - '74	USDA
Omar Smith	'74 - '75	Memphis State
Don Clements	'75 - '76	Cook's Pest Control
Gary Lentz	'76 - '77	University of Tennessee
Chester Gordon	'77 - '78	TN Dept of Agriculture..
Gene Burgess	'78 - '79	University of Tennessee
Reid Gerhardt	'79 - '80	University of Tennessee
Harold Bancroft	'80 - '81	Memphis State
Joe Dunn	'81 - '82	American Cyanamid
Bill Van Landingham	'82 - '83	TN Dept of Agriculture
Carl Brown	'83 - '84	Memphis State
Charles Pless	'84 - '85	University of Tennessee
Michael E. Cooper	'85 - '86	TN Dept of Agriculture
Elmo Shipp	'86 - '87	Mobay
Bill Shamiyeh	'87 - '88	University of Tennessee
Harvey Barton	'88 - '89	Arkansas. State Univ.
Harry Williams	'89 - '90	University of Tennessee
Bruce Kauffman	'90 – '91	TN Dept of Agriculture
Jamie Yanes, Jr.	'91 - '92	American Cyanamid
Jerome Grant	'92 - '93	University of Tennessee
Russ Patrick	'93 - '94	University of Tennessee
Lynn Snodderly	94 - 95	TN 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	TN Nursery Crop Res. Ctr.
Gray Haun	'00 – '01	TN Dept of Agriculture
Steven Hamilton	'01 – '02	Austin Peay State

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

Secretary-Treasurer	Term	Affiliation
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)

Secretary	Term	Affiliation
Gary Lentz	'91 - '93	University of Tennessee
Gary Lentz	'93 - '02	University of Tennessee

Treasurers of the Tennessee Entomological Society (1991 - present)

Treasurer	Term	Affiliation
Harvey Barton	'91 - '94	Arkansas State University
Harvey Barton	'94 - '97	Arkansas State University
Steve Powell	'97 - 02	TN Dept. of Agriculture

Editors of the Tennessee Entomological Society (1991 - present)

Editor	Term	Affiliation
Gray Haun	'91 - '99	TN Dept. of Agriculture
Lynn Snodderly	'00 - 01	TN Dept. of Agriculture
Gray Haun	'01 - 02	TN Dept. of Agriculture

Board of Directors
Members at Large

Member	Term	Affiliation
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 MO
Alan Hopkins	94 - 95	Miles, Inc.
Steve Powell	'95 - 96	TN Dept. of Agriculture
Jim Bogard (Retired)	'95 - _96	TN Dept of Agriculture
Hans Chaudhary	'96 - 97	TN Dept. of Agriculture
Cletus Youmans	'96 - 97	American Cyanamid
Larry Latson	'97 - 98	David Lipscomb University
Catharine Mannion	'97 - 98	TN State University
Karen Vail	'98 - 99	University of TN
Roberto Pereira	'98 - 99	University of TN

Jim Keener	'00 - 01	TDA, Division of Forestry
Lee Greer	'00 - 01	Valent
Frank Hale	'01 - 02	University of TN
Ray McDonnell	'01 - 02	TDA

Historians of the Tennessee Entomological Society (1973 - Present)

Historian	Term	Affiliation
Charles Pless	'73 - '76	Univ. of Tennessee
Herb Morgan	'76 - '79	USDA
Mendell Snodgrass	'79 - '82	USDA
Russ Patrick	'82 - '87	Univ. of Tennessee
Russ Patrick	'87 - '92	Univ. of Tennessee
Harry Williams (retired)	'92 - '01	Univ. of Tennessee
Frank Hale	'01 - 02	Univ. of Tennessee

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

Honorary Member	Year	Affiliation
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)

Recipient	Year	Location
Kim Woodard	2002	Trousdale Co., TN

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

Recipient	Year	Location
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
Jeremy Smith	1994	Savannah
George Carroll	1995	Anderson Co.
Stacy Milhahn	1996	Lincoln Co
Nancy Warden	1997	Marshall Co.
Denise Byrum	1998	Moore Co.
James Johnson	1999	Shelby Co.
Wade Black	2000	Bolivar, TN

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

Recipient	Year	Affiliation
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

Recipient	Year	Affiliation
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 (retired)	2002	Univ. Of Tennessee

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

Recipient	Year	Location
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

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 may be 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 of 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 [illegible] 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 release 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 $50.00 check to be given to the Student Paper Competition winner 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. 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.2/

1/ Contact Dr. Harry Williams for this information at least one month before the annual meeting.

2/ Contact either Dr. Reid Gerhardt or Dr. Gary Lentz 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.

1. Dates ('00), ('01) refer to last meeting attendance or last dues payment. ($5.00 Regular, $1.00 Student, $25.00 Sustaining/Corporate).

2. H = Honorary Member

TENNESSEE ENTOMOLOGICAL SOCIETY

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