

# **THE FIREFLY**

**Proceedings of the Eighteenth  
Annual Meeting of the  
Tennessee Entomological Society**

**October 18 - 19, 1990  
Music City Rodeway Inn  
Nashville, Tennessee**

**Volume Five**

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# PROCEEDINGS OF THE EIGHTEENTH ANNUAL MEETING

October 18 - 19, 1990

Music City Rodeway Inn

**Life History of Brachymeria ovata,  
a Parasitoid of Lepidopteran Pupae**  
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Brachymeria ovata, a hymenopteran pupal parasitoid in the family Chalcididae, parasitizes more than 100 species of Lepidoptera. Experiments were conducted in the laboratory to determine development time on the cabbage looper, Trichoplusia ni, at  $27 \pm 2$  C, as well as longevity and progeny production of adults.

Dissected host pupae were examined to determine development time. Eggs of B. ovata hatch in 24 to 36 hours. Larvae pupate six to 10 days after hatching, and the pupal period lasts six to eight days.

To determine longevity, individual males, individual females, and paired males and females provided with fresh pupae daily were placed in petri dishes with honey streaked on the lid as a food source. On the average, individual females lived 121 days and individual males lived 103 days. Longevity of females paired with males and provided with pupae averaged 14 days, whereas males lived 82 days.

Paired females provided with 30 pupae per day produced an average of 84.6 progeny over the female's lifetime. Most males were produced early, and female production peaked later in the ovipositing female's life. The male to female ratio was 1:1.9.

Seasonal incidence of B. ovata in the field was determined by placing pupae on the foliage of several crops, and by observing adults. In 1985 in South Carolina, females were active in August and September. In Knoxville, Tennessee, adults were found in July and August in 1989 and 1990.

**Insects Associated with Winter Rape, Brassica napus oleifera,  
in West Tennessee**

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Winter rape, the third largest source of vegetable oil in the world, may provide an alternative agricultural crop for growers in Tennessee. Little information is available on the associated insect complex attacking winter rape in Tennessee. Thus, a two-year research project was initiated to identify the insect pests and predators, as well as their seasonal population dynamics, on winter rape.

Beginning in the spring of 1990, seven commercial winter rape fields were sampled weekly in west Tennessee. Insects were collected using sweep nets, and taken to the laboratory for identification. The three most commonly encountered yield-reducing insects were the cabbage seed weevil [Ceutorhynchus assimilis], cabbage stem weevil [Ceutorhynchus quadridens], and turnip aphid [Lipaphis erysimi]. The cabbage seed weevil infested winter rape during the flowering period. Larvae feed on developing seeds. Cabbage seed weevil was present from 7 April to 4 June, and the peak of the overwintering adult population coincided with flowering in late April. The F1 generation reached its maximum density in late May. Infestations of the cabbage stem weevil, a less serious pest, were low and sporadic. Larval tunneling weakens the stems, and damaged stems easily break. Turnip aphid feeds on and damages leaves, flowers, and seed pods. Populations fluctuated in response to plant flowering. Turnip aphids were collected from 9 March to 14 May. At two locations, aphid populations caused significant damage to winter rape.

Biological information, such as that obtained during this study, should enable researchers to develop and implement better management strategies for insect pests of winter rape.

## Wild Host Plants of Tobacco Budworm and Corn Earworm in Eastern Tennessee

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Tobacco budworm (TBW), Heliothis virescens (F.), and corn earworm (CEW), Helicoverpa (= Heliothis) zea (Boddie), are major pests of vegetable and row crops throughout the Southeastern United States. Both species are multivoltine and highly polyphagous feeding on a wide variety of cultivated and wild host plants. Due to the unique physiography, climate and cropping practices in Eastern Tennessee, a survey of the wild host plants of TBW and CEW was conducted in this region during 1990 to determine which species of wild hosts serve as hosts for populations of TBW and/or CEW.

TBW or CEW larvae were found on twenty-seven species of wild host plants in ten families. Early-season hosts reported to be important in previous studies, such as Carolina geranium, Geranium carolinianum L., and old-field toadflax, Linaria canadensis L., were not found to be hosts in Eastern Tennessee. Mid-season hosts (June-July), such as black medic, Medicago lupulina L., common mallow, Malva neglecta Wallroth, and crown vetch, Coronilla varia L., were found to support larvae of both TBW and CEW, with TBW as the predominant species. Crown vetch, a new host record for Tennessee, was a host plant of TBW and CEW from June to October.

Some important late-season hosts of TBW and CEW included velvetleaf, Abutilon theophrasti Medicus (late July-October), tall and ivy-leaved morningglory (Ipomoea purpurea (L.) Roth and I. hederacea (L.) Jacquin, respectively) (August-October), hairy galinsoga, Galinsoga ciliata (Raf.) Blake (September), hophornbeam copperleaf, Acalypha ostryaefolia Riddell (September-October), and prickly sida, Sida spinosa L. (late August-October). Prickly sida supported the largest number of CEW. An exclusive late-season host of CEW was fall panicum, Panicum dichotomiflorum Michaux (September-October).

In addition to this survey, suitability studies were conducted in the laboratory to assess the influence of three wild host plant species (e.g., crown vetch, tall morningglory, and prickly sida) on the survivability and development of TBW. A standard pinto-bean diet was used as a control. Larvae were maintained in petri dishes and fed plant vegetation, plant flowers, or diet. Larval developmental time was monitored and pupal weights were measured. Developmental time was shortest and pupal weights were greatest for TBW fed diet. Among the plant types, larvae fed crown vetch vegetation had the shortest developmental time and the greatest pupal weight. The remaining plant types ranked according to suitability (in descending order) were crown vetch flowers, tall morningglory vegetation, tall morningglory flowers, prickly sida flowers, and prickly sida vegetation.

**Arthropods Commonly Associated with Musk Thistle  
in Middle and Eastern Tennessee**

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In conjunction with a biological control program using plant-feeding weevils to suppress populations of musk thistle, Carduus thomeri, in Tennessee, an ecological study also was conducted to assess the arthropod fauna associated with musk thistle. The objectives of this study were to: identify arthropod species associated with musk thistle, determine arthropod/thistle interactions, assess the impact of selected insect species on thistle development, and monitor the seasonal incidence of selected arthropod species.

During the early stages of thistle growth, adults and nymphs of several species of spittlebug (primarily the meadow spittlebug) were commonly found along the stem of the plant. These insects can cause stunting of the plant, reducing its reproductive ability. The flowering stage attracted a great variety of insects and spiders to the plant. The four-lined plant bug caused significant foliar damage in some areas. Japanese beetles were occasionally observed to feed throughout the plant. Deep within the flower, thrips, minute pirate bugs, negro bugs, tumbling flower beetles, and lizard beetles were frequently encountered. Among the most commonly encountered species on the outside of the flower included the tarnished plant bug, spotted cucumber beetle, and soldier beetle. Bumblebees, honey bees, syrphid flies, leaf beetles, butterflies and skippers were also often observed on the flowers. Other insect groups commonly found on the plant during this time included stink bugs, grasshoppers, ants, lady beetles, assassin bugs, and leaf-footed bugs. Spiders from the following families also were found on thistle: Thomisidae, Theridiidae, Oxyopidae, Clubionidae, Salticidae, and Araneidae.

The larva of a pyralid moth, Dicymolomia julianalis, was observed to consume developing seeds within the seedhead. A single larva is capable of destroying all seeds in a seedhead. Random samples of seedheads were collected at sites in middle and east Tennessee in late July and early August 1990 and placed in plastic bags to determine the infestation level of the moth. The number of adult moths that emerged per seedhead at each site was calculated. At six sites in middle Tennessee, the average number of adult moths that emerged per seedhead ranged from 0.01 to 0.20, averaging 0.09. At four sites in east Tennessee, the average number that emerged ranged from 0.13 to 0.24, averaging 0.19, suggesting a greater infestation level in east Tennessee. Other insects, such as green lacewings and parasitic wasps, that emerged from field-collected seed heads also were collected.

**Comparative Anatomy of the Cephalic Region between  
Two Species of Scale Insects (HOMOPTERA: Coccoidea)  
with Phylogenetic Implications**

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The cephalic region of two male scale insect pests of ornamental plants in Tennessee were examined under the light microscope. Because the head region in male scale insects is specialized, their morphology may infer phylogenetic relationships.

The two species, Phenacoccus gossypii Townsend and Cockerell and Unaspis euonymi (Comstock), were reared in a greenhouse, processed and mounted on slides for microscopic examination. Histological sections of the cephalic gross morphology were studied and results compared for the two species.

Both species shared similar general arrangement in eye, antennae, internal structure and lack of mouthparts. However, P. gossypii possessed larger eyes, antennae and greater lumen volume internally than U. euonymi, a diaspidid. The antennae of P. gossypii, although larger, displayed an inner luminal space with fewer cells than that of U. euonymi, whose inner space was composed of numerous neurons and interneurons. The ocelli of P. gossypii were larger, possessed longer retinula cells in the rhabdomere with diffuse pigmentation, and well-defined corneagen cells, while U. euonymi had smaller ocelli with more compact retinula cells, more intense pigmentation and lacked well-defined corneagen cells. The cephalic ganglion of P. gossypii was found within a spacious central cavity of the head. Around this cavity was a layer of adipose tissue and the lateral innervations to the ocelli.

**Impact of Selected Management Strategies on  
Populations of Cereal Leaf Beetle on Wheat**

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Several studies were conducted to evaluate the influence of selected management strategies on populations of cereal leaf beetle (CLB), Oulema melanopus (CLB), in wheat fields in Tennessee. The objectives of this research were to: 1) assess the influence of planting date and variety on densities of CLB (eggs, larvae and adults), 2) assess the impact of selected fungicide treatments on populations of CLB (eggs, larvae and adults), and 3) assess the efficacy of selected insecticides against CLB larvae, as well their impact on nontarget organisms.

In most studies, adult CLB populations were significantly higher in the early planted wheat (planted during late October to early November). However, densities of CLB eggs and larvae were significantly lower in the early planted wheat, suggesting that adults do not

prefer to oviposit in mature wheat or natural enemies were more abundant in that system. The three varieties evaluated were Saluda, Pioneer 2555 and Caldwell. Cereal leaf beetle populations were influenced by variety; generally, adults do not oviposit on varieties of wheat with high amounts of pubescence.

Fungicide application did not influence the densities of CLB larvae or adults. However, CLB larvae were effectively controlled by insecticides, as densities of CLB larvae in each insecticide treatment were significantly lower than those in untreated plots on the sampling dates posttreatment. Carbofuran provided the most effective control throughout the posttreatment sampling period.

### **Association of Tree Species and Culicoides Species in Eastern Tennessee**

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Treehole Culicoides are an important part of the hematophagous insect fauna in wooded areas. Treeholes are a type of phytotelmata, which are plant or parts of plants which can hold water, common within mature stands of hardwoods. Collections of moist organic material from 189 treeholes and 36 tree species were made from 6 counties of eastern Tennessee. Four Culicoides species emerged with significant numbers from 9 tree species. The emergence in descending order is Culicoides guttipennis (Coquillet) (38%) emerged from 37% of the treeholes with Culicoides and 61% of the tree species, C. footei Wirth and Jones (27%) from 16% of the treeholes and 39% of the tree species, C. paraensis (Goeldi) (17%) from 15% of the treeholes and 36% of the tree species and C. lahillei (Iches) (8%) emerged from 13% of the treeholes and 33% of the tree species. The treehole breeding Culicoides emerged from a wide range of tree species within the forest ecosystem.

### **Tick Transmitted Disease in Tennessee**

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The three tick transmitted human diseases in Tennessee are Rocky Mountain Spotted Fever (RMSF), Lyme Disease (LD) and Human Ehrlichiosis (HE). RMSF has remained relatively constant at 40-50 human cases per year (1987-1990). Reporting of LD to the Tennessee Communicable Disease Center has increased dramatically from 1 human case in both 1987 and 1988 to 38 in 1989 and 43 in 1990 (through August). LD seems to be concentrated in Middle Tennessee, but total cases are too few to draw definite conclusions. HE occurred only two times in Tennessee in 1989.



**Morphometric Studies on the Wings of the Coccoidea**

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The wings of 27 male scale insect species were evaluated using an image analysis system. This system provided a means of acquisition, editing, recording, and analysis of digital images of morphological features. The data evaluated included number and location of veins, length and width of wings, density of veins, wing shape and area. Ten distinctive wing patterns have been identified from the specimens evaluated. Because of the consistency of the wing features, morphometric studies incorporating imaging techniques may assist in determining affinities among the various insect taxa.

**Videotape: Biological Control of Musk Thistle in Tennessee**

Jerome F. Grant, Paris L. Lambdin, Renee Chagnon, and Steve D. Powell

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A videotape (ca. 10 minutes) was developed to provide general information related to the use of introduced plant-feeding weevils for suppression of musk thistle in Tennessee. This videotape provides an overview of an ongoing cooperative, interagency biological control program between the Tennessee Department of Transportation, the Tennessee Department of Agriculture, and the University of Tennessee at Knoxville. The purpose of this videotape is to familiarize the public with this program, its goals, and expected benefits. This videotape (VHS) is available on loan to any interested individual, group, or organization (e.g., county agent, instructor, and garden club).

**Laboratory Services - Overall View with Emphasis  
on Water Quality Indicators**

Jeff Duke

Tennessee Department of Health and Environment

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**NO ABSTRACT SUBMITTED**

**Ecoregions and Application of Water Quality Indicator Data**

Jeff Duke

Tennessee Department of Health and Environment  
Nashville, Tennessee 37247-0801

**NO ABSTRACT SUBMITTED**

**Pesticide Handling and Container Disposal**

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Pesticide handling and container disposal is being addressed by the Federal and most State governments in addition to some land grant institutions, but this is not the situation in Tennessee to date. EPA, some State departments and land grant agricultural institutions do have guidelines for handling and disposal of agricultural pesticide containers. The general regulations are:

Metal and plastic - Triple rinse or pressure rinse and puncture so it cannot be used as a container for any purpose.

Cardboard and paper - Completely empty and crush.

Glass - Triple or pressure rinse.

Oil - Recycle at oil company collection stations.

According to EPA, when the above are accomplished, the local landfill should accept the processed pesticide containers. This is not the case in Tennessee. Each county or city landfill designates what material they will accept, and many landfills will not accept the processed pesticide containers as indicated above. Major pesticide manufacturers are already addressing this issue. They have bulk returnable containers as well as individual returnable containers. There are dissolvable packages, dissolvable pelleted pesticides, enclosed systems and concentrated formulations.

Virginia, California, and other states have, or are going to propose, legislation concerning pesticides. The Senate has approved an EPA study on the disposition of pesticide containers.

## **Update on Regulatory Pest Problems in Tennessee**

**Michael E. Cooper**

**Tennessee Department of Agriculture**

**Nashville, Tennessee 37204**

The State Department of Agriculture under a cooperative agreement with the USDA APHIS PPQ monitored pheromone traps for Gypsy moths in 37 East Tennessee Counties. In addition, 6,729 traps were placed in 89 counties, by several cooperating state and federal agencies. A total of 141 moths was caught state wide. There was a 70 percent reduction in the number of moth catches this year. The greatest reduction was in Sequatchie County where the population decreased 98 percent, due primarily to the eradication efforts carried out there during May and June. Egg mass surveys were carried out at 14 sites during the winter of 1989-90. These sites were surveyed due to the high number of moth catches during the 1989 trapping season. Two of the sites were positive: Shooks Gap - Seymour, TN and the Sequatchie County site on Waldens Ridge (see "Prediction and Evaluation Committee Report - 1990" for additional information and accompanying maps).

Trapping during the 1991 season will be focused on the Middle Tennessee Region as well as the three above mentioned areas. In addition, four sites (two in Sevier County, one in Rhea County, and one in Dickson County) have been targeted for egg mass surveys.

Survey, eradication, and suppression efforts were continued against both the red and black imported fire ant. Division plant inspectors checked 1,058 nurseries, 2,231 plant dealers, 362 vegetable transplant growers, and 536 greenhouse operations for insect and disease problems including imported fire ant infestations. Plant inspectors also checked 168 shipments of nursery stock/sod entering the state for compliance with state/federal imported fire ant regulations. Four shipments were found not to be in compliance.

New black imported fire ant (BIFA) infestations were found in Wayne (12), Lawrence (3), Chester (2), and Fayette (3) Counties. All of the above mentioned BIFA infestations have been treated, with the exception of two in Lawrence County which will be treated this spring. All of these infestations have consisted of only two or three mounds, with the exception of one spot in Wayne County which consisted of approximately 60 mounds.

State and federal quarantines exist for portions of Hardin and McNairy Counties. A federal quarantine exists for the southeastern portion of Hardeman County (South and East of a line that follows U.S. highway 64 from the East side of the county to the city of Bolivar. Then highway 18 from the city of Bolivar to the point it exits the county near the city of Grand Junction). State regulations have not yet been amended to reflect this portion of Hardeman County. In Hardin County all areas south of 35 degrees, 20 minutes North latitude have been quarantined, and in McNairy County all areas south of 35 degrees 15 minutes North latitude have been quarantined (these areas are easily found by referring to a Tennessee county highway map for McNairy or Hardin Counties).

**Population Dynamics of Thrips on Wheat**  
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Thrips populations were sampled on wheat at the West Tennessee Experiment Station during the spring 1988-90. During April 1988 and 1990, thrips populations increased 6-12 fold. As wheat matured, thrips numbers declined, but a concomitant increase was measured on cotton as the crop grew. Frankliniella spp. present on wheat were also collected on cotton.

**Treatment of a Gypsy Moth Infestation  
in Sequatchie County**  
Bruce W. Kauffman  
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The first detection of gypsy moth in Sequatchie County occurred on Waldens Ridge due east of Dunlap during the summer of 1988. Subsequent ground surveys during the fall of 1988 found hundreds of hatched egg masses and pupal cases near two residences. Delimiting trapping was conducted in 1989, followed by egg mass removal and two public meetings. Treatment of 230 acres was begun in 1990, using an integrated approach of diflubenzuron applied from the ground to the area of highest egg mass density and an aerial application of disparlure flakes over the entire treatment area. Gypsy moth trapping results in 1990 indicated a population reduction of 98 percent over 1989 data. Use of the disparlure treatment appears to be promising for small gypsy moth infestations in environmentally-sensitive areas.

**Development and Survival of Drosophila melanogaster (DIPTERA: DROSOPHILIDAE)  
on Diets Containing Tissues of Acremonium-infected Tall Fescue**  
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**NO ABSTRACT SUBMITTED**

**Tennessee Entomological Society  
Minutes of the 1990 Annual Meeting  
October 18 - 19, 1990**

**Board of Directors Meeting  
(10:18 A.M., October 18)**

**Present:** Bruce Kauffman, Harry Williams, Charles Pless, Harvey Barton, Joe Dunn, Jim Bogard, Rich Caron.

- 1) **Treasurer's Report - As of October 17, 1990 we have \$2,305.20 in the account. A treasurer's report will be available at the business meeting. The T.E.S. now owns a cash box for registration.**
- 2) **Our new name tags are permanent. Mike Cooper will bring the tags and provide a box in which the tags should be deposited after the meeting.**
- 3) **Registration - Loretta Johnson (Tenn. Dept. of Agric.) will assist in registration. Provided for the meeting by members are: a large screen, a caramate (for speakers needing to review slides), 2 projectors, and an overhead projector. A good podium light and microphone are provided by the hotel. Dues are \$5.00, registration is \$15.00, student dues are \$1.00, sustaining member dues are \$25.00 (in addition to the \$5.00 and \$15.00 member dues and registration, respectively). Students pay no registration and honorary members pay no dues or registration.**

**Therefore, total dues and registration for certain members are as follows:**

**Students - \$1.00  
Honorary Members - \$0.00  
Regular Members - \$20.00  
Sustaining Members - \$45.00 (member + company)**

**Registration and dues were already approved at the August 10, 1990 Board meeting.**

- 4) **Jim Bogard announced that the hotel has 18 rooms registered and hotel arrangements were satisfactory so far.**
- 5) **A committee sign-up sheet should be passed among members during the meeting.**

- 6) Vacant election positions - Harvey Barton will present member names for election to 2 members-at-large and 1 President-Elect positions. Nominations from the floor will be requested at the business meeting.
- 7) Reid Gerhardt will provide the names of the student paper judging team and the rating forms.
- 8) Secretary and Treasurer positions - The split of Secretary/Treasurer into 2 positions (Secretary and Treasurer) was discussed. A motion will be presented to the membership and voted on during the business meeting. The constitution should be amended accordingly. The split would fortify the Board of Directors. Duties should be split between the Secretary and Treasurer, which is especially beneficial to each during the annual meeting.
- 9) T.E.S. Incorporation - Committee development for incorporation will be brought up before the membership. Incorporation is thought to protect members in the future. The committee chairperson should be located in Nashville where incorporation procedure information is easily obtained. The T.E.S. Board may check with officials of the Tennessee Agricultural Chemical Association for instruction. The T.E.S. is bound for incorporation only and not tax-free status at this time. The name of the T.E.S. may change to T.E.S., Inc. as the South Carolina Entomological Society exists (for example).
- 10) Richard Gross of Motlow State Community College was approved by the Board as a regular member. Mr. Gross sent \$5.00 dues and an application to the Secretary/Treasurer prior to the 1990 Annual Meeting.
- 11) A list of students presenting papers is needed for Society payment of the students' evening meals.
- 12) Program changes - one paper was added to the preliminary program.
- 13) Paris Lambdin will give the Prediction and Evaluation Committee report during the business meeting.
- 14) Jerome Grant will bring "The Firefly" from the UT print shop.
- 15) Jerome Grant will bring the T.E.S. program.

- 16) The need for paper abstracts was addressed again. The prompt submission of abstracts before or during the meeting would enhance publication of The Firefly. The Board discussed methods to obtain abstracts promptly. Maybe we should limit abstracts to 500-1,000 words, say. A motion was made that "we have abstracts submitted prior to or at the meeting such that The Firefly can be published promptly." The motion was seconded and by vote, the motion was passed. The issue is to be presented at the business meeting.
- 17) The Secretary/Treasurer will be audited this afternoon.
- 18) We will meet with the hotel manager to discuss next year's meeting if the membership decides to return to the same hotel.

The Board Meeting was adjourned at 11:18 A.M.

### Sessions of the Annual Meeting

The 1990 Annual Meeting of the Tennessee Entomological Society was called to order by Harry Williams at 1:00 P.M., October 18. Carroll Southards chaired Session I including seven papers from 1:00 to 2:45 P.M. Bruce Kauffman chaired Session II including four papers from 3:15 to 4:30 P.M.

A dinner was held at the Music City Rodeway Inn restaurant beginning at 7:00 P.M.

The T.E.S. Business Meeting was held on the morning of October 19, followed by paper Session III, including six papers and chaired by Paris Lambdin.

### Business Meeting (8:15 A.M., October 19)

President Harry Williams called the Business meeting to order at 8:15 A.M., October 19. President Williams thanked all committees especially the Local Arrangements and Program Committees for their work. He thanked the students for their presentations and thanked Loretta Johnson for her help during registration.

The minutes of the November 1989 Meeting and August 10 Board Meeting (handed out during registration on October 18) were accepted by the membership.

### Special Reports

Gene Burgess reminded the membership to sign sheets for recertification points.

The Africanized bee has moved into Texas.

The membership was advised to place permanent name tags in a box at the end of the meeting.

President Williams passed out Committee sign-up sheets and asked everyone to try to get involved with the Society Committees.

Those choosing to become chairpersons should indicate that.

New Honorary Member - It was announced that Joe Dunn was selected by the Board as the newest Honorary Member of the Society.



## Treasurer's Report

Rich Caron, Secretary/Treasurer, presented the financial status of the T.E.S. up to October 18, 1990. At that time the T.E.S. account held \$2,305.20. The report was accepted by the membership.

## Committee Reports

### 1) Nominating Committee - Harvey Barton (Chairperson)

Harvey placed the names of Paris Lambdin and Jim Keener (Members-at-Large) and Jaime Yanes, Jr. (President-Elect) in nomination. No nominations from the floor were made. Paris, Jim and Jaime were elected by acclamation.

### 2) Membership Committee - Charles Watson, Jr. (Chairperson)

Charles sent mailings of the Society flier and membership application to Tennessee Junior Colleges, Colleges and Universities. They were sent in early September and included a "call for papers." Charles suggested that this be done yearly in late August or early September.

Not much progress has been made on the T.E.S. brochure. Assistance from the graphics people at Clemson is needed to develop the brochure. Charles is checking on prices and publication style which should include pictures and text. He will circulate the brochure layout (when complete) to the Board with updated cost of production.

It was suggested that we send The Firefly with the Membership Committee's mailout next year.

### 3) Awards Committee - Reid Gerhardt (Chairperson)

The 1990 Bruer Award was given to Tim Gentry, an outstanding 4-H high school student from Woodbury, TN. Chairperson of the Awards Committee will arrange for an appropriate plaque. The County Agent in that county will choose a time for plaque presentation and local T.E.S. publicity.

The 1990 student award winner is Bobby Brown, U.T. Knoxville, who received a \$50.00 award and will receive a plaque.

### 4) Constitution Committee - Joe Dunn (Chairperson)

No changes in the constitution need to be discussed at this time. Changes need to be discussed when we get to new business.

5) Publicity Committee - Joe Dunn (Chairperson)

Joe sent T.E.S. meeting notices to 6 or 7 farm presses and magazines to place our meeting on their meeting rosters. Five months notice should be allowed to get our meeting printed in the popular presses on time.

6) Publication and Editorial Committee - Jerome Grant (Chairperson)

Jerome pointed out that The Firefly was published. He thanked his Committee members and others who helped on the format. He appreciated all those who provided abstracts and urged that this year's abstracts be submitted as soon as possible.

7) Auditing Committee - Mike Cooper (Chairperson)

Mike and his Committee members reviewed all the Treasury books and records and found the books to be in order.

8) Program Committee - Bruce Kauffman (Chairperson)

Bruce thanked all of the speakers and thanked his Committee members for their help. He appreciated the video and audio equipment and the timely publication of the program.

9) Prediction and Evaluation Committee - Paris Lambdin (Chairperson)

Paris had no report at this time and had received no reports.

Some new insect and mite pest problems were discussed. These included the 2-banded Japanese weevil, the Japanese beetle, the white-fringed beetle, the black vine weevil, the rhododendron tip midge, the tulip tree scale, the Varroa mite and the tracheal mite.

Everyone who has a 1990 report needs to send it to Paris for publication in The Firefly.

10) Local Arrangements Committee - Jim Bogard (Chairperson)

A new contract with the hotel would be about the same as last year. Jim was thanked for his efforts on the hotel accommodations and arrangements.

Old Business - None

## New Business

### 1) Split of Secretary/Treasurer Position:

The Board has been discussing a proposed split of Secretary/Treasurer into separate Secretary and Treasurer positions. If two persons split the work of the existing Secretary/Treasurer position, each person would not have as great a load during the entire meeting. The question was raised whether the new proposed Secretary would be responsible for The Firefly. A new position, Editor, was proposed to handle The Firefly. An editor would provide continuity in publication.

The next Constitution Committee needs to draft constitutional changes including new officer descriptions and get notice to membership for a vote next year. There is a need to add Editor, Secretary and Treasurer to the constitution.

The Editor should be on the Board of Directors and possibly have a 3 year term. The editor needs assistance but has the final word on or total authority over the editorial decisions.

Next year we can vote on proposed changes. The Secretary and Treasurer positions should be staggered; e.g., if both are 3 year positions, elect one position for 2 years at first.

Next year the Constitution Committee will report back to the membership on constitutional changes regarding the above.

### 2) T.E.S. Incorporation:

The possibility of T.E.S. Incorporation was discussed by the membership. The next President needs to appoint a committee to look into incorporation fees and procedures. The committee reports to the Board and the Board decides whether or not to charter.

### 3) Firefly Abstracts:

Speakers are encouraged to submit their abstracts for The Firefly promptly.

## Next Meeting Place and Time -

The qualities of other hotels in the Nashville area were discussed by the membership. The Local Arrangements Committee needs to research other hotels for possible alternate meeting sites for 1991. The membership voted to meet during the second or third week of October. Exact time and place will be announced. A decision will need to be made within 3 weeks since we must secure the Music City Rodeway Inn within a month.

President-Elect Bruce Kauffman was escorted to the podium by Past Presidents Gerhardt, Pless, Barton, Burgess, Cooper, Lentz, and Dunn. Harry Williams passed the gavel to Bruce.

Bruce and Awards Chairperson Reid Gerhardt presented a plaque to outgoing President Williams.

President Kauffman presented a short address to the membership and then adjourned the Business Meeting at 9:45 A.M.

**Board of Directors Meeting**  
(11:57 A.M., October 19)

Present: Harry Williams, Bruce Kauffman, Paris Lambdin, Jim Keener, Rich Caron.

President Bruce Kauffman called the meeting to order at the Music City Rodeway Inn, Nashville, TN.

- 1) The Board reviewed the committee sign-up sheets. Committee members and chairpersons are to be selected for 1990-91.
- 2) All new members were approved. These were Michael Boyd, Clair Pantall, Ken Nafe, Jim Dattilo, Larry Hanning and John Skinner.
- 3) The Board approved the second or third week of October for the T.E.S. meeting time in 1991. The Local Arrangements Committee will look into a new meeting place.
- 4) The Past-President will send a congratulatory letter to the student winner and thank you notes to Loretta Johnson and the hotel management.
- 5) Hotel - We will need to get together by telephone within 30 days to decide whether or not to return to the Music City Rodeway Inn.
- 6) Incorporation - The Board will establish a committee for T.E.S. incorporation. We will need recommendations for the next Business Meeting. The Board approved Joe Dunn to chair an ad hoc committee within the Constitution Committee to look into incorporation mechanics.

- 7) The Nominating Committee is to prepare 3 names for new proposed Board positions: Secretary, Treasurer, Editor. The Constitution Committee is to amend the constitution to accommodate the 3 new positions. The membership will vote in 1991 on the constitutional changes.
- 8) The Board agreed to hold a meeting in August 1991.

The Board of Directors meeting was adjourned at 12:21 PM.

**Tennessee Entomological Society  
Minutes of the Board of Directors  
and Committee Chairperson Meeting**

**August 10, 1990**

(This meeting was held as an organizational meeting prior to the annual meeting, October 18 - 19, 1990)

Present: Joe Dunn, Harry Williams, Bruce Kauffman, Mike Cooper, Rich Caron.

President Harry Williams called the meeting to order (10:25 A.M.) at the Extension District II Auditorium, Ellington Agricultural Center, Nashville, TN.

- 1) The Board reviewed the minutes of the November 1989 business meeting.
- 2) Treasurer's Report - As of August 10, 1990 we have \$2,462.05 in the account. This is about \$200 more than at the same time last year. A treasurer's report will be available at the annual meeting.
- 3) During the Board meeting of September 15, 1989, the Board was told the cost of name tags with the T.E.S. logo would range from \$160-180. This information was inadvertently left out of the meeting minutes.
- 4) The Board approved two new members who paid dues in December of 1989. These are O.Z. Evers and Houston Chandler who are licensed pest control operators in Memphis.

Committee Reports

Nominating Committee - Harvey Barton, Chairperson, not present - no report.

Membership Committee - Charles Watson, Jr., Chairperson, not present - no report.

- All members in arrears should be encouraged to attend the annual meeting.

Awards Committee - Reid Gerhardt, Chairperson, not present - no report.

Constitution Committee - Joe Dunn, Chairperson.

- The T.E.S. members should go over the constitution and make any changes they deem necessary.
- The constitution does accommodate all of the Directors on the Board.

**Publicity Committee - Joe Dunn, Chairperson.**

- Joe will write letters to get our annual meeting listed in Delta and Southeast Farm Presses and the Ag Consultant magazine.
- Joe will poll the committee members for suggestions.

**Auditing Committee - Mike Cooper, Chairperson.**

- No report at this time.

**Program Committee - Bruce Kauffman, Chairperson.**

- We are all set on the meeting reservations.
- The Secretary/Treasurer will send out a second meeting reminder mailing after the "Call For Papers" mailout has been completed.
- We need a paper on pesticide container disposal.
- Abstracts of talks are needed at the time the talks are given.
- Call for papers needs to go out next week.
- Potential program talks and mechanics were discussed.

**Prediction and Evaluation Committee - Charles Patrick, chairperson, not present - no report.**

- Copies of the Prediction and Evaluation Committee report should be available at the annual meeting.

**Publication and Editorial Committee - Jerome Grant, Chairperson, not present - no official report.**

- Mike Cooper has only one-half of the abstracts from last year's annual meeting for The Firefly.
- The Firefly contents and needs were discussed. Jerome Grant needs to put The Firefly together.

Local Arrangements Committee - Jim Bogard, Chairperson, not present - no report.

- The annual meeting will be held October 18-19, 1990.
- Meeting rooms, accommodations, refreshments and motel costs were discussed.
- Meeting room cost changed from \$60 to \$65 per day.

Old Business - none

New Business

- 1) We need a pointer, large screen, projector stand, empty carousels, and a caramate for the annual meeting.
- 2) We need two tables for registration at meeting.
- 3) The Board approved the registration and dues: \$15.00 (registration), \$5.00 (dues), \$1.00 (student dues), \$0.00 (honorary members), and sustaining members - \$25.00 (for company) plus registration (\$15.00) and dues (\$5.00) (for industry member).
- 4) Program Chairman will be in charge of the committee sign-up sheet.
- 5) Vacant positions for elections (at the next annual meeting): Members-at-large and President-Elect.
- 6) Awards Committee should provide a student paper judging team and student rating forms for the annual meeting.
- 7) The Board discussed the possibility of splitting the Secretary/Treasurer position into two positions, Secretary and Treasurer. The motion should be brought up during the business meeting. The constitution will need to be changed to accommodate the new positions and will need to be amended accordingly.
- 8) A committee needs to be developed to look into T.E.S. incorporation.

The Board Meeting was adjourned at 12:16 P.M.

Respectfully submitted,

Richard E. Caron  
Secretary/Treasurer, T.E.S.



**T.E.S. TREASURER'S REPORT**  
**8/21/90 to 8/27/91**

Balance: \$2,460.05  
(as of 8/21/90)

<b>Expenses (August 22 to October 17, 1990)</b>		
Stamps	\$ 19.75	
Mailout Charges	29.41	
Recording Tapes + Cashbox	<u>15.69</u>	
	\$ 64.85	\$2,395.20
<b>Income (August 22 to October 17, 1990)</b>		
Dues	\$ 10.00	\$2,405.20
Cash for October 1990 Meeting -	\$100.00	\$2,305.20

as of 10/18/90 - audited by  
Auditing Committee, Michael  
Cooper, Chairperson

<b>Expenses (October 1990 Meeting)</b>		
Plaque	\$ 33.40	
Music City Rodeway Inn (Student Meals)	37.65	
(Coffee + Meeting Room)	177.25	
Robert Brown (Student Award)	<u>50.00</u>	
	\$298.30	\$2,006.90
<b>Income (October 1990 Meeting)</b>		
Dues	\$184.00	
Registration	510.00	
Pins (1)	10.00	
Sustaining Members	<u>25.00</u>	
	\$729.00	\$2,735.90
Deposited cash for Meeting - \$100.00		\$2,835.90
<b>Expenses (November 6, 1990 to August 27, 1991)</b>		
Mailing and Postage Stamps	\$ 7.40	
Program + Firefly Printing	<u>118.40</u>	
	\$125.80	\$2,710.10
<b>Income (November 6, 1990 to August 27, 1991)</b>		
Dues	25.00	
Pin (1)	<u>10.00</u>	
	\$35.00	\$2,745.10
		(August 27, 1991)

Number of pins on hand: 33 (August 27, 1991)

**Note: Years ago, Mike Cooper filled out and signed forms such that he could easily gain access to the T.E.S. bank account on behalf of the membership. Since Mike has left Tennessee, Gary Lentz and Russ Patrick have the same access. The above serves to protect the T.E.S. funds just in case the Secretary/Treasurer meets his demise or otherwise malfunctions. T.E.S. funds are held by First American National Bank, Jackson, TN.**

**ATTENDANCE ROSTER OF THE 1990 ANNUAL MEETING  
OF THE TENNESSEE ENTOMOLOGICAL SOCIETY**

<u>MEMBER</u>	<u>AFFILIATION</u>	<u>LOCATION</u>
Aydelotte, Gregg R.	TN Dept. of Ag.	Springfield, TN
Barton, Harvey E.	AR State Univ.	State Univ., AR
Bogard, James B.	TN Dept. of Ag.	Nashville, TN
Boyd, Michael L.	Univ. of TN	Knoxville, TN
Brown, Robert C.	Univ. of TN	Morristown, TN
Bruer, Howard	Retired	Nashville, TN
Burgess, Edward E.	Univ. of TN	Knoxville, TN
Cagle, Jimmy L.	TN Dept. of Ag.	Winchester, TN
Caron, Richard E.	Univ. of TN	Jackson, TN
Cate, Randy H.	Univ. of TN	Martin, TN
Chaudhary, Hans R.	TN Dept. of Ag.	Harriman, TN
Clouse, William T.	TN Dept. of Ag.	Oak Ridge, TN
Cole, Amy M.	Univ. of TN	Knoxville, TN
Cole, Bruce A.	TN Dept. of Ag.	McMinnville, TN
Cooper, Michael E.	TN Dept. of Ag.	Nashville, TN
Dattilo, Jim J.	USDA-APHIS-PPQ	Nashville, TN
Davis, Sylvester	TN Dept. of Ag.	Mt. Juliet, TN
Duke, Lisa C.	Univ. of TN	Knoxville, TN
Dunn, Joe C.	Retired	Nashville, TN
Gerhardt, Reid R.	Univ. of TN	Knoxville, TN
Grant, Jerome F.	Univ. of TN	Knoxville, TN
Hammett, John A.	Retired	Knoxville, TN
Hanning, Larry R.	MO Dept. of Ag.	Bufordville, MO
Heery, Frank L.	TN Dept. of Ag.	Harrison, TN
Kauffman, Bruce W.	TN Dept. of Ag.	Nashville, TN
Keener, James A.	TN Dept. of Ag.	Knoxville, TN
Lambdin, Paris L.	Univ. of TN	Knoxville, TN
Lentz, Gary L.	Univ. of TN	Jackson, TN
Nabors, Ray A.	Univ. of MO	Portageville, MO
Nafe, Kenneth	TN Dept. of Ag.	Fairview, TN
Pantall, Claire H.	TN Dept. of Ag.	Columbia, TN
Pless, Charles D.	Univ. of TN	Knoxville, TN
Powell, Steve D.	Univ. of TN	Knoxville, TN
Rochelle, John B.	TN Dept. of Ag.	Elizabethton, TN
Self, Anni	TN Dept. of Ag.	Nashville, TN
Skinner, John A.	Univ. of TN	Knoxville, TN
Smith, Russell L.	Univ. of TN	Knoxville, TN
Southards, Carroll J.	Univ. of TN	Knoxville, TN
Sudbrink, Jr., Donald L.	Univ. of TN	Knoxville, TN
Vail, Elizabeth R.	Univ. of TN	Knoxville, TN
Watson, Charles N.	Clemson Univ.	Clemson, SC
Watson, Ernest B.	Retired	Pulaski, TN
Williams, Harry E.	Univ. of TN	Knoxville, TN
Yanes, Jr., Jaime	American Cyanamid	Memphis, TN

## **BOARD OF DIRECTORS**

President - Bruce W. Kauffman  
Past President - Harry E. Williams  
President Elect - Jaime Yanes, Jr.  
Secretary/Treasurer - Richard Caron  
Historian - Charles Patrick  
Member at Large - James Keener  
Member at Large - Paris Lambdin

## **COMMITTEES**

### NOMINATING

Gene Burgess - Chair  
Jerome Grant  
Charles Pless  
Paris Lambdin

### MEMBERSHIP

Charles Watson, Jr. - Chair  
Charles Pless  
Michael Boyd  
Elizabeth Vail  
John Rochelle

### AWARDS

Reid Gerhardt  
Gene Burgess  
Harvey Barton  
Paris Lambdin

### CONSTITUTION

Joe Dunn - Chair  
Carroll Southards  
Richard Caron  
Gary Lentz  
Elizabeth Vail

### LOCAL ARRANGEMENTS

Jim Bogard - Chair  
Gene Burgess  
John Rochelle

### PUBLICITY

Harry Williams - Chair  
Michael Boyd  
Elizabeth Vail

### AUDITING

Gary Lentz - Chair  
Reid Gerhardt  
Carroll Southards

### PROGRAM COMMITTEE

Jaime Yanes - Chair  
Rich Caron  
Reid Gerhardt  
Jim Keener  
Harvey Barton  
Ray Nabors

### PREDICTION EVALUATION

Paris Lambdin - Chair  
Jimmy Cagle  
Bruce Kauffman  
Harry Williams  
Jerome Grant

### PUBLICATION/EDITORIAL

Jerome Grant - Chair  
Bruce Kauffman  
Charles Watson  
Ray Nabors

# **Tennessee Entomological Society**

## **Prediction and Evaluation**

### **Committee Report**

**October 18 - 19, 1990**

**Paris L. Lambdin - Chairman**

**Committee Members:**

**Richard Caron**

**Hans Chaudhary**

**Mike Cooper**

**James Eisler**

**Reid Gerhardt**

**Charles R. Patrick**

**N.B. Shamiyeh**

**Lynn Snodderly**

**Harry Williams**

**Jaime Yanes, Jr.**

## COTTON INSECT CONDITIONS - 1990

RICHARD E. CARON

The 1990 cotton crop followed a 1989 crop that was seriously affected by boll weevils. Severely low temperatures for a few days in December 1989 were expected to reduce numbers of overwintering boll weevils. The first boll weevil was caught in a pheromone trap on April 4 near Selmer, TN. From late March to late April, 83 weevils were captured in 134 traps (the same time period in 1989 yielded 732 weevils). By May 18, 272 weevils were captured (compared to 3,426 in 1989).

By early June, cool nights and excessive moisture enhanced thrips problems and caused poor cotton growth and seedling disease. Much of the cotton acreage consisted of late planted cotton. Through mid June, pinhead square stage cotton insecticide applications were made for boll weevils over many acres. By late June, there were very few beneficial insects in cotton. Many beneficial were occurring in other crops (e.g., alfalfa). Big-eyed bugs (tarnished plant bug predators) were notably missing. Tarnished plant bugs were abundant on weed hosts and in alfalfa.

In early July a few aphids, tarnished plant bugs and bollworms/tobacco budworms occurred in cotton. Boll weevil damage was virtually nil at this point. By mid July, bollworm eggs and larvae, tarnished plant bug, aphids, and spider mites were building in populations. In late July, beet armyworms were found in cotton in some isolated cases (associated with pigweed) and some boll weevil reproduction was reported. Aphids were plentiful along with populations of lady beetles, lacewings and aphid wasp parasites. Bollworms and yellowstriped armyworms occurred in subeconomic populations (in most cases).

In early August, aphid populations were exceedingly high as were beneficial insect populations (where beneficials were not killed with insecticide applications). Excessive damage by beet armyworms occurred in Lincoln County (Middle TN) and fall armyworms were found in localized populations in West TN.

Aphid populations decreased rapidly due to parasitization by wasps, predation by lady beetles, lacewings and syrphids, and fungus disease infection by mid August. During late August, nearly all aphids were dead and spider mites built to an economic problem due in part to drought conditions. We experienced a huge bollworm moth flight but serious worm problems in cotton did not materialize. Some fall armyworm damage to bolls occurred.

By mid September, spider mites were still a problem. Stink bugs and boll weevils were building up late season populations.

## SOYBEAN INSECT CONDITIONS - 1990

RICHARD E. CARON

Insect pest pressure on the 1990 Tennessee Soybean crop was very light in general. By June 11, 20% of the soybean acreage was planted. Some bean leaf beetles occurred on early planted soybeans at that time.

Thrips were very numerous on early soybeans through June 25 as were minute pirate bugs (a thrips predator).

Light to no pest problems occurred through most of July. In early July, Japanese beetles were defoliating soybeans in Blount County. Growers were advised to watch for bean leaf beetles, green cloverworms, threecornered alfalfa hoppers and grasshoppers. During mid-July, grasshopper populations were reported to be heavy in Mississippi. Garden webworms occurred in subeconomic populations in Fayette County. Garden webworms fed in the tops of plants, spinning silk material as they fed. By July 23, grape colaspis caused 30% defoliation in Lincoln County soybeans. The bean lycaenid (gray or common hairstreak = cotton square borer) was found to feed in terminals of Weakley County soybeans.

By August 6, pest activity remained low. Some green clover-worms were reported along with relatively high numbers of beneficial insects such as big-eyed bugs, damsel bugs, lady beetles, minute pirate bugs, and spiders. Growers were advised to watch for corn earworm problems especially in blooming soybeans. By mid August a soybean field was found to be heavily infested with yellowstriped armyworms. An adjacent pasture was disked and the caterpillars moved into the soybeans. Green stink bugs began to move into soybeans. Beneficial insect populations were moderate to high. By August 20, defoliation was generally light. Growers were advised to monitor closely pod-feeding corn earworms and stink bugs.

From late August through early September, we experienced a hugh corn earworm moth flight (based upon pheromone and light trap catches).

Some corn earworm adults were found in soybeans by September 4. Concurrently, predatory insects were moving into soybeans from cotton which had aphid problems. The predators included adult green lacewings, lady beetles, and syrphid flies. From mid to late September growers were advised to watch for pod-feeding caterpillars and stink bugs. Mississippi reported problems with beet armyworms, soybean loopers, green cloverworms, and grasshoppers. By September 24, low to moderate populations of stink bugs and grasshoppers were observed in Tennessee.

In general, the soybean crop suffered from a lack of moisture for most of the season. Over 1.25 million acres, state statisticians estimated a 26 bu./A yield as of November 11.

## FOREST AND SHADE TREE INSECTS - 1990

Bruce W. Kauffman

### FOREST INSECTS

Loblolly pine sawfly (Neodiprion taedae linearis Ross) infestations were almost nonexistent in areas west of Nashville with only light defoliation being reported in one western Tennessee county (Benton). Scattered defoliated loblolly pines were found in the central Tennessee counties of Davidson, Grundy, Maury, Rutherford and Williamson. In the same region, moderate defoliation of Virginia and shortleaf pine occurred in one location each in Putnam County due to the Virginia pine sawfly (Neodiprion pratti pratti Dyar).

Counties with southern pine beetle (Dendroctonus frontalis Zimmermann) activity decreased to 15 (27 in 1989) and were located primarily in the southern half of eastern Tennessee (see attached map). Statewide, the number of spots (192) decreased when compared with the 1989 figures (93% reduction) and the number of trees killed (1535) also decreased in relation to last year's totals (98% reduction). Southern pine beetle activity continued to decline throughout the year in all 15 counties except in a mountainous portion of Sevier County near Gatlinburg. The average spot size of infestations statewide (8 trees/spot) has decreased, and no infestations at epidemic levels are known to occur on state and private lands.

A few single dead pines were common in most counties statewide. However, no extended dry weather periods caused an increase in the number of pines killed by Ips spp. beetles in most areas of the state.

Gypsy moth (Lymantria dispar (L.)) trapping showed a reduction of 72 percent in the number of moths caught statewide over 1989 (143 moths in 1990). The greatest reduction was in Sequatchie County where the population decreased 98 percent. This was due primarily to the eradication efforts carried out there during May and June. A new infestation was discovered in Rhea County where 17 moths were caught. Other egg mass surveys were negative in Sevier and Dickson Counties.

Twenty-one (21) counties had at least one moth trapped with three new county records (Dickson, Humphreys, Robertson). Over 80 percent of the gypsy moths caught in the state in 1990 were trapped east of the line drawn from Cookeville to Chattanooga. Sevier County had the greatest number of moths found in any county (63 moths). A breakdown of gypsy moth catches by county follows this summary.

Yellow poplar weevil (Odontopus calceatus (Say)) feeding continued at 10 percent or less in the southern half of eastern Tennessee. A maximum of 30 percent defoliation was reported in eastern Tennessee which places infestations at the same levels or reduced levels when compared with 1989. New feeding increased in Carter, Cocke, Davidson, and Putnam Counties. The infestation in Cocke County was particularly noticeable at higher elevations.



The eastern tent caterpillar (Malacosoma americanum (Fabricius)) defoliated black cherries throughout the state at lower levels than last year in eastern and central Tennessee and at higher levels in western Tennessee. Over 70 percent of the black cherry trees in western Tennessee received greater than 50 percent defoliation. Scattered counties in central and eastern Tennessee had high defoliation levels, but, on the average, defoliation was reduced.

Defoliation by the spring cankerworm (Paleacrita vernata (Peck)) was light on hackberry in the counties of the Nashville Basin. Cutworm (Noctuidae) levels were reduced from 1989 when scattered post oaks were defoliated in the eastern half of the state.

Leaf browning by the locust leaf miner (Odontota dorsalis (Thunberg)) continued at the same level as last year. Infestations generally remained high in the mountainous areas of northern Tennessee where black locust was concentrated in continuous stands. However, in neighboring counties where the concentration of trees was reduced, low defoliation occurred. This same pattern existed in central Tennessee where black locusts have been established for a long period of time. However, some new infestations in sapling - sized stands were noted in Smith and Wilson Counties.

The oak lace bug (Corythucha arcuata (Say)) continued to cause noticeable leaf yellowing over the entire crowns of scattered white and chinkapin oaks in forest stands in central Tennessee. Damage by the sycamore lace bug (Corythucha ciliata (Say)) appeared to be reduced in central Tennessee this year.

Fall webworm (Hyphantria cunea (Drury)) populations increased in western Tennessee and scattered locations in central Tennessee. Some heavy defoliation (over 50 percent) was noted in these areas. Static to low populations were common in eastern Tennessee and other scattered central Tennessee counties. Increased survival and feeding by orange-striped oakworms (Anisota senatoria (J.E. Smith)), yellow-necked caterpillars (Datana ministra (Drury)) and some other late summer hardwood defoliators was present statewide in scattered locations.

### SHADE TREE INSECTS

The following shade tree insects had the greatest number of requests in Nashville in decreasing order: eastern tent caterpillars and other spring defoliators, hardwood borers, boxelder bugs, Nantucket pine tip moth, adelgids and aphids, hardwood gall makers, mites of conifers and hardwoods, carpenter ants, fall webworm, scales.

Bagworm (Thyridopteryx ephemeraeformis Haworth) populations continue at low levels statewide on eastern redcedar. A total of four counties in central and eastern Tennessee have reported an increase in infestations.

Infestations of the mimosa webworm (Homadaula anisocentra Meyrick) in western and central Tennessee remain light, although some central Tennessee counties were experiencing more widespread populations on honey locust. Pine spittlebug (Aphrophora parallela (Say)) continued to be noticeable on loblolly, white and Virginia pines statewide.

A gradual reduction of populations of boxelder bug (Leptocoris trivittatus (Say)) became apparent in Davidson County in 1990 after nuisance problems have continued for

five years. Japanese beetles (Popillia japonica (Newman)) continue population buildups in the eastern third of the state. Sassafras and ornamental fruit trees have been heavily defoliated in scattered areas including the Cumberland Plateau.

Increased feeding of the red-headed pine sawfly larvae (Neodiprion lecontei (Fitch)) last fall carried over into the first generation of 1990 in western and central Tennessee. However, populations were then reduced, and damage leveled off for the rest of the year. Eriophyid mite damage was epidemic on loblolly pine in central Tennessee. Scattered high populations also occurred on hardwoods in western and central Tennessee.

White pine weevil (Pissodes strobi (Peck)) damage was reported to white pine on the northern Cumberland Plateau. Twig girdler (Oncideres cingulata (Say)) damage to hickory and persimmon was on the increase in a total of four central and western Tennessee counties.

### **Regulatory Pest Problems in Tennessee** Michael E. Cooper

The State Department of Agriculture under a cooperative agreement with the USDA APHIS PPQ monitored pheromone traps for Gypsy moths in 37 East Tennessee Counties. Traps were placed at a rate of one trap per four square mile in most cases. Special delimiting surveys (16 or 32 traps per square mile) were carried out by USDA personnel in Shelby, Rutherford, Sumner, Davidson, and Knox Counties. A total of 6,729 traps was placed in 89 counties, by several cooperating state and federal agencies. A total of 141 moths was caught state wide. There was a 70 percent reduction in the number of moth catches this year. The greatest reduction was in Sequatchie County where the population decreased 98 percent, due primarily to the eradication efforts carried out there during May and June. Egg mass surveys were carried out at 14 sites during the winter of 1989-90. These sites were surveyed due to the high number of moth catches during the 1989 trapping season. Two of the sites were positive: Shooks Gap - Seymour, TN and the Sequatchie County site on Waldens Ridge.

At the Sequatchie County site, 340 viable egg masses were found on an apple tree and a nearby out-building. This find was in addition to spent egg masses and larvae found elsewhere on the property and reported in 1989. The apple tree and out-building were treated with two applications of diflubenzuron during May 1990. The entire 230 acre site was treated utilizing a mating disruption technique on June 18, 1990. This technique was carried out by the application of 30.4 grams AI/acre of Disrupt II<sup>™</sup> by aircraft and specially designed application equipment. The project was coordinated by The U.S. Department of Agriculture - Plant Protection and Quarantine and The Tennessee Department of Agriculture, with technical assistance from The U.S. Forest Service and U.S. Department of Agriculture - Agricultural Research Service. Approximately 20 square miles around the infestation were trapped this summer. Eleven square miles were trapped at a rate of 9 traps per square mile and nine square miles around the site were trapped at 16 traps per square mile. To date, only six moths were caught, and these were all outside the treated area.

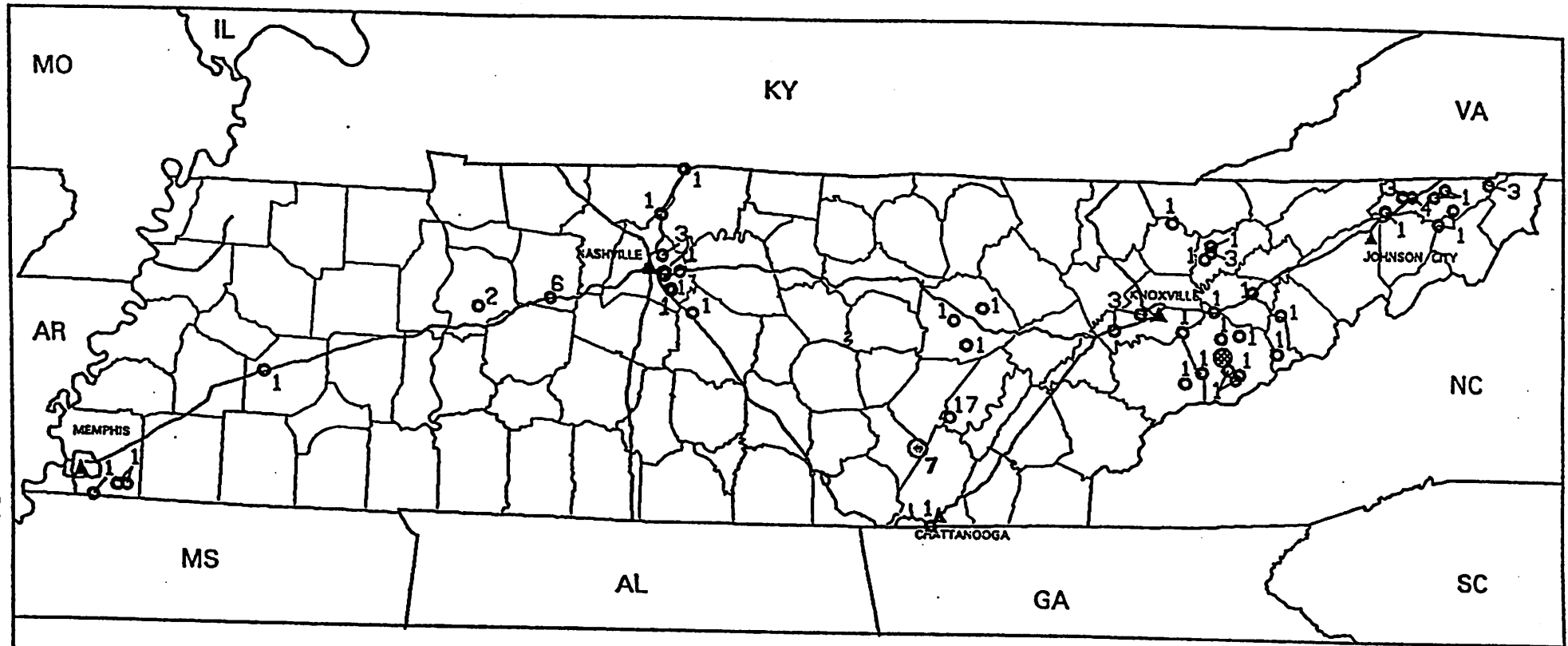
In northwestern Sevier County (Shooks Gap - Seymour, TN) a nine square mile delimiting grid was placed around a suspected infestation. The center square mile was trapped at 32 traps per square mile and the remaining eight square miles were trapped at a rate of nine per square mile. Only one moth was caught, and it was within the 32 traps per square mile grid (16 moths were caught in 1989). The center of this site was the home of an antique dealer who made regular trips to the Northeast. Several egg masses were found on a purple martin house recently purchased from Pennsylvania, and one egg mass was found on a camper trailer. Several ground surveys found no more egg masses and larval banding of trees was negative. The purple martin house was fumigated to kill any gypsy moth eggs that might be viable. A delimiting grid will be placed around this site during the 1991 field season. It appears that this site was discovered before an infestation could develop.

Trapping during the 1991 season will be focused on the Middle Tennessee Region as well as the three above mentioned areas. In addition, four sites (two in Sevier County, one in Rhea County, and one in Dickson County) have been targeted for egg mass surveys.

Survey, eradication, and suppression efforts were continued against both the red and black imported fire ant. Division plant inspectors checked 1,058 nurseries, 2,231 plant dealers, 362 vegetable transplant growers, and 536 greenhouse operations for insect and disease problems including imported fire ant infestations. Plant inspectors also checked 168 shipments of nursery stock/sod entering the state for compliance with state/federal imported fire ant regulations. Four shipments were found not to be in compliance.

New black imported fire ant (BIFA) infestations were found in Wayne (12), Lawrence (3), Chester (2), and Fayette (3) Counties. All of the above mentioned BIFA infestations have been treated, with the exception of two in Lawrence County which will be treated this spring. All of these infestations have consisted of only two or three mounds, with the exception of one spot in Wayne County which consisted of approximately 60 mounds.

State and federal quarantines exist for portions of Hardin and McNairy Counties. A federal quarantine exists for the southeastern portion of Hardeman County (South and East of a line that follows U.S. highway 64 from the East side of the county to the city of Bolivar. Then highway 18 from the city of Bolivar to the point it exits the county near the city of Grand Junction). State regulations have not yet been amended to reflect this portion of Hardeman County. In Hardin County all areas south of 35 degrees, 20 minutes North latitude have been quarantined, and in McNairy County all areas south of 35 degrees 15 minutes North latitude have been quarantined (these areas are easily found by referring to a Tennessee county highway map for McNairy or Hardin Counties).



## 1990 GYPSY MOTH TRAP DATA - TENNESSEE

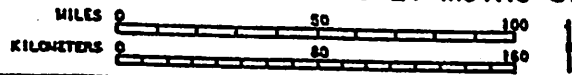
**LEGEND:**

- Sequatchie County Infestation site on Waldens Ridge. This site is 230 acres in size and was treated this past summer. Seven moths were caught after the treatment, all outside of the treated area. Follow-up trapping is planned for the next two years.
  
- Sevierville/Pigeon Forge/Gatlinburg tourist area, 55 moths were caught at 11 campgrounds. The highest catch was 27 moths at a single campground.

- Positive traps
- 2 Number caught
- Interstates
- ▲ Major cities

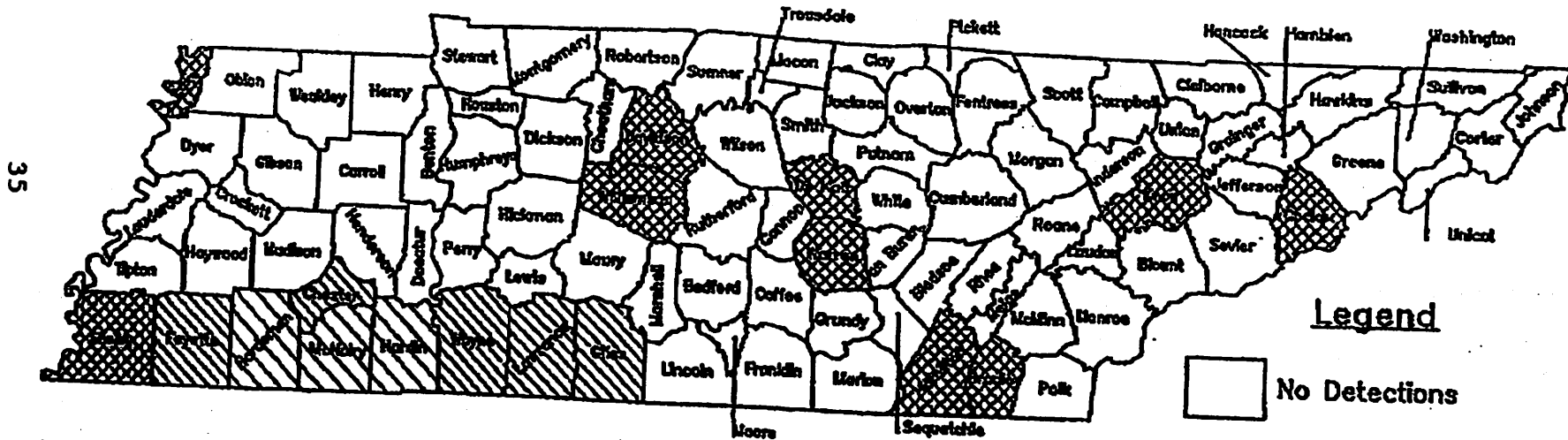
**DATA SOURCES:**  
 TENNESSEE DEPARTMENT OF AGRICULTURE  
 PLANT INDUSTRIES DIVISION  
 TENNESSEE DIVISION OF FORESTRY  
 UNITED STATES DEPARTMENT OF AGRICULTURE  
 APHIS - PLANT PROTECTION AND QUARANTINE  
 U. S. FOREST SERVICE

**PREPARED BY:**  
 TENNESSEE VALLEY AUTHORITY  
 FOREST RESOURCES DEVELOPMENT PROGRAM  
 AND  
 MAPS AND SURVEYS DEPARTMENT



# IMPORTED FIRE ANT DETECTIONS AND DISTRIBUTION IN TENNESSEE AS OF DECEMBER 1990

BIFA = Black Imported Fire Ant RIFA = Red Imported Fire Ant



### Legend

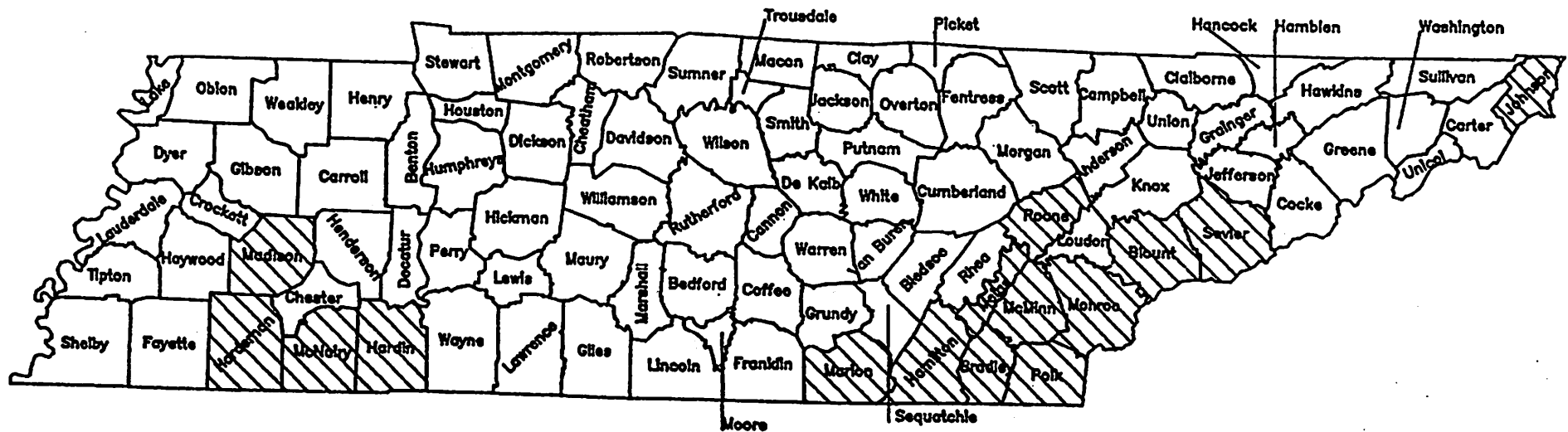
- No Detections
- Portion Quarantined
- BIFA Detected
- RIFA Detected

No BIFA detections were made in Giles County during 1989 or 1990  
 No RIFA detections have been made in Warren, Williamson or Van Buren since 1986.  
 No RIFA detections have been made in Bradley County since 1988.  
 No RIFA detections were made in Lake County in 1990.

The following counties have been quarantined for BIFA infestations:  
 Hardin Co. - That portion South of 35 degrees 20 minutes North latitude.  
 McNairy Co. - That portion South of 35 degrees 15 minutes North latitude.  
 Hardeman Co. - South and East of a line that follows U.S. highway 64  
 from the East side of the County to the city of Bolivar. Then highway 18 from the  
 city of Bolivar to the point it exits the county near the city of Grand Junction.



# SOUTHERN PINE BEETLE INFESTATIONS IN TENNESSEE – December, 1990



37



– At least one southern pine beetle infestation present within the county. All counties have endemic populations of the insect.

**HISTORICAL NOTES**  
**Presidents of the Tennessee**  
**Entomological Society (1973 - Present)**

<u>President</u>	<u>Term</u>	<u>Affiliation</u>
Mendell Snodgrass	'73 - '74	USDA
Omar Smith	'74 - '75	Memphis State
Don Clements	'75 - '76	Cook's Pest Control
Gary Lentz	'76 - '77	Univ. of Tennessee
Chester Gordon	'77 - '78	Tenn. Dept. of Agric.
Gene Burgess	'78 - '79	Univ. of Tennessee
Reid Gerhardt	'79 - '80	Univ. of Tennessee
Harold Bancroft	'80 - '81	Memphis State
Joe Dunn	'81 - '82	American Cyanamid
Bill Van Landingham	'82 - '83	Tenn. Dept. of Agric.
Carl Brown	'83 - '84	Memphis State
Charles Pless	'84 - '85	Univ. of Tennessee
Michael E. Cooper	'85 - '86	Tenn. Dept. of Agric.
Elmo Shipp	'86 - '87	Mobay
Bill Shamiyeh	'87 - '88	Univ. of Tennessee
Harvey Barton	'88 - '89	Ark. State Univ.
Harry Williams	'89 - '90	Univ. of Tennessee
Bruce Kauffman	'90 - '91	Tenn. Dept. of Agric.

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

<u>Secretary-Treasurer</u>	<u>Term</u>	<u>Affiliation</u>
Jimmy White	'73 - '76	Tenn. Dept. of Agric.
Harold Bancroft	'76 - '79	Memphis State
Lyle Klostermeyer	'79 - '82	Univ. of Tennessee
Bill Shamiyeh	'82 - '85	Univ. of Tennessee
Richard Caron	'85 - '88	Univ. of Tennessee
Richard Caron	'88 - '91	Univ. of Tennessee

**Board of Directors**  
**Members at Large**

<u>Member</u>	<u>Term</u>	<u>Affiliation</u>
Gary Lentz	'87 - '88	Univ. of Tennessee
Blake Bevill	'87 - '88	Ark. State Univ.
Michael E. Cooper	'88 - '89	Tenn. Dept. Agric.
Jay P. Avery	'88 - '89	Univ. of Tennessee
Joe Dunn	'89 - '90	American Cyanamid
Charles Pless	'89 - '90	Univ. of Tennessee
Paris Lambdin	'90 - '91	Univ. of Tennessee
Jim Keener	'90 - '91	Tenn. Dept. of Agric.



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

<u>Historian</u>	<u>Term</u>	<u>Affiliation</u>
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

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

<u>Honorary Member</u>	<u>Year</u>	<u>Affiliation</u>
Myron Smith	1982	Hill-Smith Pest Control
Jimmy White	1982	Tenn. Dept. of Agric.
Howard Bruer	1983	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

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

<u>Recipient</u>	<u>Year</u>	<u>Location</u>
Whitney Eckler	1975	Memphis, TN
Joe Martin	1976	Bolivar, TN
Bryan Peters	1977	College Grove, TN
Tidus Pollard	1978	Huron, TN
John Bentley	1979	??
Melissa Hart	1980	Watertown, TN
Gary Miller	1981	Knoxville, TN
Harold Glass	1982	Knoxville, TN
-----	1983	(No award given)
-----	1984	(No award given)
Penny Thompson	1985	Davidson County
Matthew Fumich	1986	Munford, TN
Christie Greer	1987	Greene Co.
Dottie Hodges	1988	Hamblen Co.
-----	1989	(No award given)
Tim Gentry	1990	Woodbury, TN

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

<u>Recipient</u>	<u>Year</u>	<u>Affiliation</u>
Myron Smith	1981	Hill Smith Pest Control
Harry Williams	1985	Univ. of Tennessee
John A. Hammett	1987	Tenn. Dept. of Agric.

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

<u>Recipient</u>	<u>Year</u>	<u>Location</u>
Jay Avery	1986	Knoxville, TN
Laura Rogers	1987	Knoxville, TN
Jason Oliver	1988	Knoxville, TN
Steve D. Powell	1989	Knoxville, TN
Robert C. Brown	1990	Knoxville, TN

**CONSTITUTION**  
**of the**  
**TENNESSEE ENTOMOLOGICAL SOCIETY**  
**(as of August 1989)**

**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 Secretary-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 Secretary-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, 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 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-Treasurer:** The Secretary-Treasurer shall attend and keep the minutes of all meetings of the Board of Directors and the Society, shall have charge of the records and seal of the Society, and shall, in general, perform all the duties incident to the office of Secretary-Treasurer of the Society. The Secretary-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 Secretary-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 Secretary-Treasurer. During each annual meeting, the Secretary-Treasurer shall give a report on the annual financial condition of the Society.

**Section 5. 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 6. Vacancies in Office:** Any vacancy in the office of President-Elect, Secretary-Treasurer, 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, and Historian of the Society and two members-at-large. The members-at-large shall be elected at the Annual Meeting of the Society and shall serve a term of one year. Any three (3) Directors shall constitute a quorum for the transaction of business. All properties, property rights, objects and purposes of the Society shall be managed, promoted, and regulated generally by the Board of Directors.

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

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

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

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

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

#### **Article 10. Miscellaneous Provisions**

**Section 1.** All checks and drafts shall be signed in such manner as the Board of Directors may from time to time determine.

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

**Section 3.** All notices required to be given by this Constitution relative to any regular or special meeting of the Society or the Board of Directors may be waived by the Directors or members entitled to such notice, either before or on the date of the meeting and shall be deemed equivalent thereto. Attendance at any meeting of the Society or the Board of Directors shall be deemed a waiver of notice thereof.

**Section 4. General Prohibitions:** Notwithstanding any provision of this Constitution and By-Laws which might be susceptible to a contrary construction. A. No part of the activities of the Society shall consist of carrying on propaganda, or otherwise attempting to influence legislation. B. This Society shall not participate in, or intervene in, (including the publishing or distribution of statements), any political campaign on behalf of a candidate for public office.

**Article 11. Amendments**

**Section 1. This Constitution may be altered or amended or By-Laws adopted by a majority vote of the quorum present at any annual or special meeting of the Society membership, provided that notice of such proposed amendment or By-Laws shall have been given to the membership prior to the meeting.**



1. Dates ('89), ('90) refer to last meeting attendance or last dues payment (\$5.00).

2. H = Honorary Member

**August 27, 1991  
T.E.S.  
Membership List**

'89	Jay P. Avery 1252 Manufacturers Row Trenton, TN 38382 (901) 855-7656	H	Carl D. Brown Dept. of Biology Memphis State University Memphis, TN 38111 (901) 454-2963
'90	Greg Aydelotte 4016 New Chapel Road Springfield, TN 37172 (615) 360-0139	'90	Robert C. Brown 1930 Bluebird Circle Morristown, TN 37814 (615) 974-7135
'90	Harvey E. Barton Box 501, AR State University State University, AR 72467 (501) 972-3082	H	Howard L. Bruer 1604 Green Hills Drive Nashville, TN 37215 (615) 269-9740
'90	James B. Bogard Plant Industries TDA Box 40627, Melrose Station Nashville, TN 37204 (615) 360-0130	'90	Edward E. Burgess Ent. & Plant Pathology P.O. Box 1071 Knoxville, TN 37901-1071 (615) 974-7138
'90	Ronald E. Bolin TN Dept. of Agriculture Rt. 1, Box 347A McMinnville, TN 37110 (615) 473-4145	'90	Jimmy L. Cagle P.O. Box 341 Winchester, TN 37398 (615) 967-1240
'90	Michael Boyd 3500 Sutherland Ave. - T-207 Knoxville, TN 37919 (615) 974-7135	'90	Richard E. Caron Ent. & Plant Pathology 605 Airways Blvd. Jackson, TN 38301 (901) 425-4718

- '90 Randy H. Cate  
203 Brehm Hall, UT-Martin  
Martin, TN 38238  
(901) 587-7183
- '90 Houston Chandler  
Atlas Termite & Pest Control Inc.  
Suite 246, 4087 Summer Ave.  
Memphis, TN 38122  
(901) 323-2671
- '90 Hans R. Chaudhary  
Rt. 6, Box 392  
Harriman, TN 37748  
(615) 882-3144
- '90 William T. Clouse  
113 Amherst Ln.  
Oak Ridge, TN 37830  
(615) 483-9641
- '90 Amy M. Cole  
2521 Kingston Pike # 1509  
Knoxville, TN 37919  
(615) 974-7135
- '90 Bruce A. Cole  
R. 12, Box 73  
McMinnville, TN 37110  
(615) 473-4145
- '90 Michael E. Cooper  
Division of Plant Industries  
Idaho Dept. of Agriculture  
P.O. Box 790  
Boise, ID 83701-0790  
(208) 334-2590
- '89 Berry A. Crutchfield  
2521 Kingston Pike, Apt. 804  
Knoxville, TN 37919  
(615) 521-0678
- '90 Jim J. Dattilo  
8214 Stewarts Ferry Pkwy.  
Nashville, TN 37214-4821  
(615) 736-5346
- '90 Sylvester Davis  
922 Kelly June Dr.  
Mt. Juliet, TN 37122  
(615) 360-0130
- '90 Lisa Duke  
Ent. & Plant Path.  
P.O. Box 1071  
Knoxville, TN 37901  
(615) 974-7135
- H Joe C. Dunn  
724 Brownlee Drive  
Nashville, TN 37205  
(615) 352-5669
- '89 James I. Eisler  
Rt. 3, Box 253B  
McMinnville, TN 37110  
(615) 668-3315
- '90 Kenneth Evers  
Evers & Sons Termite & Pest  
Control Co.  
3010 Johnson Ave.  
Memphis, TN 38112  
(901) 327-6033
- '90 O.Z. Evers  
Evers & Sons Termite & Pest  
Control Co.  
3010 Johnson Ave.  
Memphis, TN 38112  
(901) 327-6033

- '90 Reid R. Gerhardt  
Ent. & Plant Pathology  
Univ. of TN, P.O. Box 1071  
Knoxville, TN 37901-1071  
(615) 974-7135
- '90 Jerome F. Grant  
Ent. & Plant Pathology  
Univ. of TN, P.O. Box 1071  
Knoxville, TN 37901-1071  
(615) 974-7135
- '89 Lee Greer  
Valent  
Box 544  
Dunlap, TN 37327  
(615) 949-2747
- '90 Richard Gross  
Motlow State Community  
College  
Tullahoma, TN 37388  
(615) 455-8511
- '90 Charles H. Hadden  
Univ. of TN, P.O. Box 1071  
Knoxville, TN 37901-1071  
(615) 974-7138
- H John A. Hammett  
6013 Apache Trail  
Knoxville, TN 37920  
(615) 579-1627
- '90 Larry Hanning  
Route 1 - Box 312  
Burfordville, MO 63739  
(314) 243-8302
- '89 George L. Harp  
606 Maplewood Terrace  
Jonesboro, AR 72401  
(501) 972-3082
- '90 Frank L. Heery  
6677 Harrison Heights. Dr.  
Harrison, TN 37341  
(615) 344-7186
- '90 Bruce W. Kauffman  
TN Div. of Plant Industries  
Box 40627, Melrose Station  
Nashville, TN 37204  
(615) 360-0130
- '90 James A. Keener  
3211 Alcoa Hwy.  
Knoxville, TN 37920  
(615) 594-6098
- '90 Paris L. Lambdin  
Ent. & Plant Pathology  
P.O. Box 1071, Univ. of TN  
Knoxville, TN 37901-1071  
(615) 974-7135
- '90 Gary L. Lentz  
Ent. & Plant Pathology  
605 Airways Blvd.  
Jackson, TN 38301  
(615) 424-1643
- '90 Ray Nabors  
Rt. 3  
Portageville, MO 63873  
(314) 379-5431
- '90 Kenneth Nafe  
P.O. Box 936  
Fairview, TN 37062  
(615) 360-0139
- '90 Jason Oliver  
3208 Bisco Road  
Knoxville, TN 37931  
(615) 974-7135

- '89 Larry Olson  
607 Maplewood Terrace  
Jonesboro, AR 72401  
(501) 972-3086
- '89 Dennis Onks  
3180 Expt. Sta. Rd.  
Springfield, TN 37172  
(615) 384-5292
- '90 Claire Pantall  
607 Cumberland Dr.  
Columbia, TN 38401
- '90 Charles R. Patrick  
Ent. & Plant Pathology  
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(901) 425-4718
- '90 Charles D. Pless  
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P.O. Box 1071, Univ of TN  
Knoxville, TN 37901-1071  
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- '90 Steve D. Powell  
3500 Sutherland Ave. F-210  
Knoxville, TN 37919  
(615) 974-7135
- '90 John B. Rochelle  
P.O. Box 316  
Elizabethton, TN 37615  
(615) 477-4694
- '89 Robert L. Sammons  
Rt. 1, Box 208  
Toone, TN 38381  
(901) 658-2597
- '90 Anni Self  
TN Dept. of Agric.  
Box 40627, Melrose Station  
Nashville, TN 37204  
(615) 360-0130
- '90 N.B. Shamiyeh  
Ent. & Plant Pathology  
P.O. Box 1071, Univ. of TN  
Knoxville, TN 37901-1071  
(615) 974-7135
- '90 John Skinner  
Dept. of Ent. & Pl. Path.  
University of Tennessee Ext.  
Box 1071  
Knoxville, TN 37901-1071  
(615) 974-7138
- H Myron Smith  
2411 Reed Hooker  
Eads, TN 38028  
(901) 324-2161
- '90 Russell L. Smith  
Ent. & Plant Pathology  
P.O. Box 1071, Univ. of TN  
Knoxville, TN 37901-1071  
(615) 974-7135
- H Mendell E. Snodgrass  
228 Pat Road  
Knoxville, TN 37992  
(615) 966-7259
- H Myrtice L. Snodgrass  
228 Pat Road  
Knoxville, TN 37922  
(615) 966-7259

- '89 Jian Song  
1221 Clinch Ave.  
Knoxville, TN 37916  
(615) 522-9670
- '90 Carroll J. Southards  
Ent. & Plant Pathology  
P.O. Box 1071, Univ. of TN  
Knoxville, TN 37901-1071  
(615) 974-7135
- '90 Don Sudbrink, Jr.  
Ent. & Plant Pathology  
P.O. Box 1071, Univ of TN  
Knoxville, TN 37901-1071  
(615) 974-7135
- '90 Elizabeth Vail  
3700 Sutherland Ave. C-3  
Knoxville, TN 37919  
(615) 974-7135
- '90 Charles N. Watson, Jr.  
Dept. of Entomology  
Clemson University  
Clemson, SC 29634  
(803) 656-0428
- '90 Ernest B. Watson  
1817 Crestview  
Pulaski, TN 38478  
(615) 367-9121
- '89 G. Chris Weed  
ICI Americas, Inc.  
2229 Racquet Club Drive  
Murfreesboro, TN 37129  
(615) 895-2534
- H Jimmy R. White  
Rt. 5, Box 300  
Brownsville, TN 38012  
(901) 772-1919
- '90 Harry E. Williams  
Ent. & Plant Pathology  
P.O. Box 1071, Univ of TN  
Knoxville, TN 37901-1071  
(615) 974-7138
- '89 Dalton L. Wilson  
P.O. Box 1303  
Brentwood, TN 37027  
(615) 736-7250
- '90 Jaime Yanes, Jr.  
American Cyanamid  
7687 Deerfield Trace  
Memphis, TN 38133  
(901) 377-5779

Sustaining Members ('90)

American Cyanamid Co.

**Application for Membership in the  
TENNESSEE ENTOMOLOGICAL SOCIETY**

I (we), herewith, submit this application for membership in the Tennessee Entomological Society. Society pins are available to members for \$10.00.

**PLEASE PRINT**

Name of Prospective Member \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_ Zip Code \_\_\_\_\_

Phone Number \_\_\_\_\_ Area Code ( \_\_\_\_\_ ) \_\_\_\_\_

Occupation \_\_\_\_\_

**Please Check**

Annual Dues     \$5.00

Society Pin     \$10.00

Annual Due for Students     \$1.00

Sustaining Member Dues     \$25.00

Amount Enclosed \_\_\_\_\_

Please Remit to:

Dr. Richard Caron  
U.T. Agric. Ext. Serv.  
605 Airways Blvd.  
Jackson, TN 38301