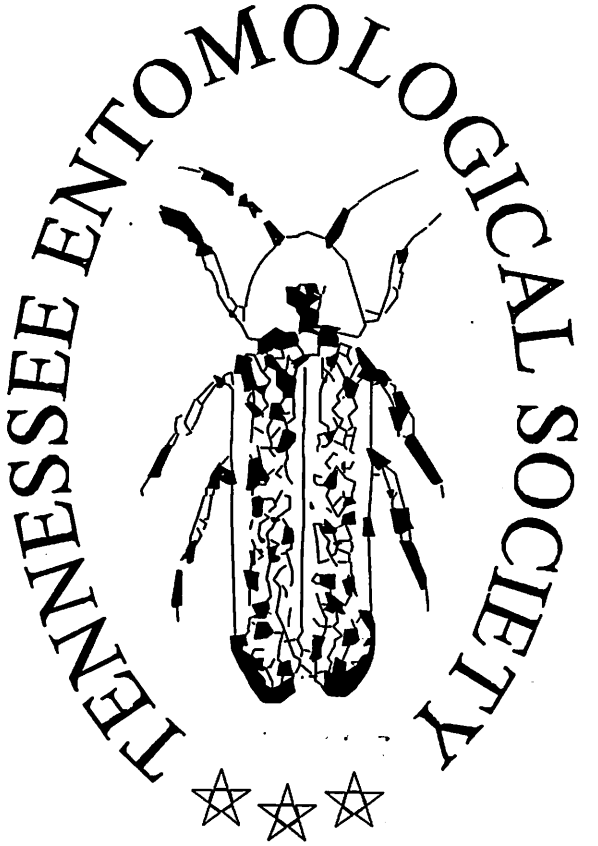
THE FIREFLY

Proceedings of the 1995 (Twenty-Second) Annual Meeting of the Tennessee Entomological Society



October 19 - 20, 1995
Ramada Inn Governor's House & Conference Center
737 Harding Place (I-65, Harding Place & Trousdale)
Nashville, Tennessee

Volume Ten

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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 at least two weeks before the TES annual meeting to:

Dr. Gary Lentz
Department of Entomology and Plant Pathology
605 Airways Blvd.
West Tennessee Experiment Station
Jackson, TN 38301

PROCEEDINGS OF THE TWENTY-SECOND
ANNUAL MEETING
OCTOBER 19-20, 1995

Ramada Inn South
Nashville, Tennessee

EVALUATION OF INTRODUCED BIOLOGICAL CONTROL AGENTS OF THE ALFALFA WEEVIL, *HYPERA POSTICA*, IN TENNESSEE.

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The alfalfa weevil, *Hypera postica* (Gyllenhal), is the most important pest of alfalfa, *Medicago sativa* L., in North America since its introduction into Utah in 1904. By the mid-1950s, the alfalfa weevil had spread into the northeastern United States. In Tennessee, this pest was first detected in 1959, and within five years, the weevil had spread throughout the state. In 1994, a two-year research project was initiated to study the alfalfa weevil and its biological control agents. Objectives of this research were to initiate an intensive study to determine seasonality and life history of the alfalfa weevil, monitor the establishment and distribution of its introduced parasitoids, determine parasitism levels, and monitor disease incidence. A state-wide survey was established to monitor the alfalfa weevil and its biological control agents in 27 alfalfa fields in nine counties. A questionnaire was developed and distributed to all agricultural extension agents in Tennessee to evaluate alfalfa production and the status of the alfalfa weevil.

In Tennessee, alfalfa weevils overwintered in both the egg and adult stages. Densities of alfalfa weevil adults and larvae peaked in April during 1994 and 1995. During this two-year study, approximately 11.39% of all field-collected larvae (n=6,215) and only about 0.43% of all field-collected adults (n=460) were parasitized. *Bathyplectes anurus* (Thomson) and *Bathyplectes curculionis* (Thomson), parasitoids of alfalfa weevil larvae, were recovered in all counties sampled. *Bathyplectes anurus* was the predominant larval parasitoid, suggesting *B. anurus* has displaced B. *curculionis* in Tennessee. Percent parasitism of larvae by *B. anurus* was 7.12% (n=6,215), and 4.12% (n=6,215) by *B. curculionis*. State-wide, *Microctonus aethiopoides* (Loan) was recovered in low numbers, suggesting poor establishment of alfalfa weevil adult parasitoids in Tennessee. *Erynia* sp., a fungal pathogen of alfalfa weevil larvae, was detected from early March to late April. The number of field-collected larvae infected by *Erynia* sp. was greater in 1994 [436 infected larvae (n=2,439)] than in 1995 [45 infected larvae (n=3,320)].

As a result of the alfalfa management questionnaire, agricultural extension agents provided solid information concerning alfalfa production and the impact of the alfalfa weevil in Tennessee. The alfalfa weevil was responsible for 15% reduction in alfalfa yield, and 78% of the extension agents listed the alfalfa weevil as the major pest of alfalfa. Growers in 96% of the alfalfa-producing counties applied insecticides to control the alfalfa weevil.

SURFACE-DWELLING AND EDAPHIC ARTHROPODS IN ENDOPHYTE-INFECTED (E+) AND ENDOPHYTE-FREE (E-) TALL FESCUE.

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Tall fescue is a common, cool-season pasture grass in the United States. When infected with the endophytic fungus, *Acremonium coenophialum*, it is associated with tall fescue toxicosis. Studies have been conducted to determine the effects of this grass/endophyte interaction on mammals as well as herbivorous arthropods. There has been little previous work done to determine the effects of the interaction on predators and decomposers. The objective of this study was to determine whether the presence of *Acremonium coenophialum* changed the community structure and population dynamics of mesoarthropods in tall fescue fields. The effects of previous methyl bromide treatment in half of the fields were also examined.

Collembola (springtails), Acari (mites), and Carabidae (ground beetles) were collected with pitfall traps for at least six weeks per season for one year. An alcohol mixture was used as a preservative in the field. Pitfall contents were collected twice weekly. Soil cores were taken once a month and arthropods were extracted either with a Crossley-Blair high-gradient soil extraction or by means of a heptane flotation technique.

The effects of endophyte-infected tall fescue on Collembola were species-specific. *Sphaeridia pumilis, Sminthurus fitchi, Sminthurinus henshawi,* and *Isotoma viridis* often had significantly higher populations in endophyte-infected (E+) tall fescue fields. *Homidia socia* and *Pseudosinella violenta* were more abundant in endophyte free (E-) fields. *Lepidocyrtus cinereus* had similar population densities in both E+ and E- fields. Association measures for Collembola indicated that E+ tall fescue selected a particular community composition. Carabids were collected in relatively low numbers in all fields and did not seem to be affected by the presence of the endophyte. Acari were more abundant in E- fields and therefore may have been adversely affected by the endophyte.

The effects of previous methyl bromide treatment were more apparent on truly edaphic species such as *Parajapyx isabellae* and *Epilhommania* sp. However, *Isotoma viridis, S. henshawi, S. fitchi, Sminthurinus elegans,* and *Sphaeridia pumilis* were most abundant in methyl bromide treated (MB+) fields. *Lepidocyrtus cinereus* and *P. violenta* were more common in fields not treated with methyl bromide (MB-). *Homidia socia* showed no preference for MB+ or MB- fields. Carabid populations were also lower in MB+ fields. Groups of Acari acted differently with respect to methyl bromide. *Galumna* sp. and other Oribatida populations were higher in MB+ fields, but *Epilohmannia* sp. was higher in MB- fields.

Additional studies on mesofauna in E+ and E- tall rescues would benefit from monitoring the alkaloid concentrations in the field. Together the information could bring about a better understanding of how the alkaloids produced by the grass/endophyte interaction affect organisms within the field. A different method of soil core extraction should be used to give a better estimate of the soil fauna present.

EFFECTS OF RELATIVE HUMIDITY ON THE SURVIVAL AND FEEDING OF SUBTERRANEAN TERMITES, *RETICULITERMES* SPP.

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Termites cause $577 million worth of damage annually in the United States, and approximately $1.5 billion is spent for control of termites each year. Previous research has dealt with direct control of termites, but little has been done to determine the effects of relative humidity and wood moisture on termites isolated in a wooden structure.

Research was conducted to determine the effects of soil access or no-soil access in three relative humidity regimes (90 to 100%, 50 to 60%, and 30 to 40%) on survival and feeding of the eastern subterranean termite, *Reticulitermes flavipes* (Kollar), and a related species, *R. virginicus* Banks. Wood moisture content in southern yellow pine *(Pinus* sp.) framing was measured and termite damage ratings were determined for weathered pine blocks and strips in each regime.

Termite survival in simulated wall voids in which termites were excluded from or allowed access to soil was determined. Colony survival at the highest humidity (90 to 100%) was full term (45 days) with 50% or more of the individuals surviving at the end of the test. The medium humidity (50 to 60%) had a greater contrast in termite survival between soil access and no-soil access voids than the lowest and highest relative humidities. At the low relative humidity (30 to 40%) significant differences in survival occurred between the soil access and no-soil access voids, but termite survival time was shortest overall.

Wood moisture content in pine frames was measured every other day at each relative humidity. There were no significant differences in wood moisture content between soil access and no-soil access frames within a single relative humidity level. However, differences were detected among the relative humidity levels, as wood moisture content was significantly greater at the highest relative humidity than at the medium and low humidities.

Wood weight loss and damage ratings were affected by termite survival, which was a function of relative humidity. There was a general trend of significantly higher wood loss and damage rating values for the highest relative humidity compared with the medium and low humidities.

THE PIT SCALES OF NORTH AND SOUTH AMERICA.

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Pit scales (Asterolecaniidae) constitute a large and economically important group of scale insects worldwide. The fauna is extremely rich and diversified with members occupying all of the major zoogeographical regions of the world. Worldwide, there are over 250 species of Asterolecaniidae recognized in 9 genera. Forty-seven of these species occur in the New World representing 7 of the 9 genera (i.e., *Asterodiaspis*, *Asterolecanium*, *Bambusaspis*, *Grammococcus*, *Mycetococcus*, *Pollinia* and *Sclerosococcus*).

Some pit scales can only be found on specific host plants (i.e., several species of the genus *Asterolecanium* solely feed on palms, genera *Asterodiaspis* and *Bambusaspis* are monophagous on oaks and bamboo, respectively), while others may feed on plants from different families (i.e., *Asterolecanium pustulans* exists on 46 plant families). Structures that may be used to separate taxa include different types of wax glands, 8-shaped pore patterns, number of anal ring setae and characteristic shapes of the clypeolabral shield.

OBSERVATIONS ON THE DIVERSITY AND DEVELOPMENT OF THE OAK ERIOCOCCIN ON NORTHERN RED OAK.

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The University of Tennessee, Knoxville, TN 37901-1071

An outbreak of the oak eriococcin, *Acanthococcus quercus* (Comstock), was observed threatening the northern red oak, *Quercus rubra,* within the U.S. Forest Service seed orchard in 1995. Twenty trees representing 10 tree families were selected for study. The life history and seasonality of *A. quercus* was assessed from specimens obtained weekly from each tree, one sample (2.5cm^2) per tree. This species overwinters as fertilized adult females. *Acanthococcus quercus has* two overlapping generations with females undergoing three developmental stages, while males have additional prepupal and pupal stages. Females have a relatively high fecundity rate [$\bar{x}$ = 119 (0-300) eggs/female]. Higher numbers of eggs were observed within the felt-like test of females on the tree families 701 and 6662, while lower egg numbers were recorded for females on hosts in tree families 323 and 896. The oak eriococcin settles and feeds on the underside of northern red oak, especially around forks, wounds, and leaf buds. These areas may provide the eriococcin protection from adverse weather conditions and predators. Newly emerged first instars often migrate and settle on the new tree growth. The eriococcin population was dispersed throughout the tree.

In April 1995, ca. 15 % of the 787 northern red oak trees in the seedling seed orchard was infested with the oak eriococcin. By July 1995, the infestation had increased to ca. 49 %. In 1995, population numbers for the overwintering generation declined from 6.56 individuals/cm^2 in July to 0. 14 individuals/cm^2 in November. No parasitoids were discovered in 1995, however, one lady beetle, *Scymus* sp., was observed feeding on gravid eriococcins. Research will be continued in 1996 to assess population density and seasonality of this pest, and to monitor for potential parasites and predators within the northern red oak seedling seed orchard.

THE DEVIL'S DARNING NEEDLE AT PICKETT STATE FOREST

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Division of Forestry
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Diapheromera femorata (Say), commonly called the walkingstick, occurs in the eastern half of the United States and adjacent Canadian provinces. Nymphs and adults favor blackberry, wild grape, huckleberry, sourwood, dogwood, several oak species, basswood, black locust and cherry. In 1995, the insect was responsible for over 500 acres of moderate to heavy defoliation on Pickett State Forest. Short-horned grasshoppers also defoliated some oak stands in concert with the devil's darning needle.

Most walkingstick eggs hatch in May and nymphs molt four or five times. The adult female measures up to three inches in length and is longer and stouter than the male. Seed-like eggs are dropped from trees to the ground at random in August at the rate of three per day and 150 per female or until cold weather comes. Since the insect does not fly, infestations are often localized.

Defoliation by the devil's darning needle has had variable impacts. Following two years of heavy red oak and basswood defoliation in Wisconsin, considerable mortality occurred. But in Arkansas, after two decades of light to heavy defoliation, there has been minimal tree dieback and mortality.

Warmer, wetter springs and warm, dry summers and falls favor walkingstick population increases. Good forest fire control for ten years or more and the predominance of the oak in the hardwood stands may provide conditions suitable for the continued spread of the devil's darning needle.

A SYNOPSIS OF THE DRAGONFLIES OF THE SOUTHWESTERN UNITED STATES.

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Arkansas State University
State University, AR 72467

An examination of the species composition of the dragonflies (Insecta: Odonata) of the southwestern United States reveals a great degree of heterogeneity in their origins. Species of Mexico (ex., *Dythemis fugax* and *Hesperagrion heterodoxum*) are interspersed with species from the west (ex., *Erythemis collocata* and *Libellula forensis*), east (ex., *Argia fumipennis, Libellula pulchella,* and *Erythemis simplicicollis*) and north (ex., *Libellula quadrimaculata*). Endemism (ex., *Erpetogomphus heterodon*) further contributes to the diversity of this group. Northern species have dispersed into this region by keeping to the high elevations in the Rocky Mountains, while southern and western species are more likely to be found along the streams at lower elevations.

BWACT: PLACEMENT AND MAINTENANCE STUDIES.

Phillip Roberts
Agricultural Extension Service
The University of Tennessee, Jackson, TN 38301

Field tests conducted in the fall of 1995 demonstrated the importance of proper placement and maintenance of Boll Weevil Attract and Control Tube (BWACT) installations. BWACTs were coated with Stickem (a glue-like gel) and placed in various environments. The number of boll weevils captured by the Stickem were counted 3 to 36 hours after installation to measure the relative attractiveness of selected placements.

BWACTs in weed-free areas attracted numerically greater boll weevils compared with BWACTs in areas where excessive vegetation was present. Placement of BWACTs under tree limbs attracted significantly fewer boll weevils compared with BWACT placements in open areas. Significantly more boll weevils were captured on the bottom half of BWACTs compared with the top half. Placement of BWACTs in fences attracted significantly fewer boll weevils compared with recommended placement on the ground.

INTEGRATED MANAGEMENT OF COTTON INSECTS IN THE BOLIVIAN SUBTROPICS.

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Department of Entomology and Plant Pathology
West Tennessee, Jackson, TN 38301

From April 11 to May 2, 1995, I worked with VOCA (Volunteers in Overseas Cooperative Assistance) and the Bolivian Cotton Producers Association, ADEPA (Asociacion Nacional de Productores de Algodon) to improve existing cotton IPM programs in eastern Bolivia near Santa Cruz. With my extension counterpart from ADEPA, Senor Ciro Simoni, and my translator, Marcelo Peredo, we traveled throughout the cotton-producing regions near Santa Cruz, visiting producer fields and investigating pest problems in the three cotton zones. Pheromone traps are being used to monitor populations of pink bollworm only. Hartstack traps should be used to monitor both Heliothine species and *Helicoverpa zea* and possibly several *Spodoptera* spp. Cotton scouts do not readily distinguish the Heliothine species. Several species of *Spodoptera* occur but are not distinguished and their seasonal occurrence is not known. The picudito, *Conotrachelus denieri,* may be attracted to the BWACT (boll weevil attract and control tube) early in the season and studies were recommended to investigate the efficacy of BWACT against the picudito. Resistance levels in the Lepidoptera species to recommended insecticides are presently unknown, but should be investigated using the AVT (adult vial technique). Producers generally follow the insecticide recommendations of the chemical warehousemen. ADEPA extension entomologists were encouraged to become more involved in insecticide evaluation and recommendation formulations.

The boll weevil, *Anthonomus grandis*, does not currently infest cotton in Bolivia. The present monitoring program was encouraged and a plan of prevention and interception was introduced. The Minister of Agriculture subsequently issued a resolution prohibiting the import of untreated seed and machinery from infested countries.

USE OF IVERMECTIN-TREATED BAITS FOR THE MANAGEMENT OF THE LONE STAR TICK, *AMBLYOMMA AMERICANUM* L. (ACARI: IXODIDAE).

Reid Gerhardt, Kimberly H. Lohmeyer and E. J. Marsland
Department of Entomology and Plant Pathology
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Deer were fed Ivermectin-treated corn in a retirement community north of Crossville, TN, in 1994 and 1995 in an attempt to reduce free-living lone star tick (*Amblyomma americanum*) populations. A treatment and a non-treatment area separated by natural boundaries were established. Free-living ticks were sampled by dragging and CO_2 traps. Lone star tick reproduction was reduced in the treatment area. When compared to the number of female ticks found in each area, there was a 4-fold decrease in the number of larval masses found in the treated area over the number found in the untreated area. Continuing the treatment in the next few years will help to further delineate the efficacy of using Ivermectin to control lone star tick populations.

IMPORTED FIRE ANTS IN TENNESSEE.

Dale Gallimore
The Tennessee Department of Agriculture

This paper focused on aspects related to the imported fire ant (IFA) in Tennessee. The current quarantine area for IFA and the influence of the rapid growth of the green industry that provides vehicular movement of IFA were discussed. The life cycle and selected behavioral characteristics of IFA were presented. The IFA has been found to survive in colder climates than were previously predicted. The USDA estimates that IFA will eventually infest about two-thirds of the continental United States. This presentation concluded with a brief videotape on IFA.

APICULTURE RESEARCH AT THE NATIONAL BEE LAB IN TUCSON, ARIZONA.

Ray Nabors
University of Missouri Extension Center
Portageville, MO 63873

ABSTRACT NOT AVAILABLE

REGULATORY INSECT UPDATE FOR 1995.

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Plant Industries, P.O. Box 40627
Nashville, TN 37204

A total of 20,940 acres of cotton were included in the 1995 Boll Weevil Eradication Program in middle Tennessee. The eleven participating counties were Coffee, Franklin, Giles, Grundy, Lawrence, Lincoln, Maury, Moore, Rutherford, Warren, and Wayne.

New county records for the red imported fire ant for 1995 include the following: Benton, Dyer, Lewis, and Sumner. The list of counties considered generally infested with Japanese beetle remains unchanged from 1994. Japanese beetles were trapped at plant dealerships in the following counties: Gibson, Henry, Madison, Shelby, and Weakley. The two known isolated areas of Japanese beetle in West Tennessee appear to be growing. Japanese beetles (1,147) were trapped at the I-40 Rest Stop area in Madison County and 8,000 were trapped in the Bells area in Crockett County. Three were trapped in Marshall County and two in Lawrence County.

A total of 25 Oriental beetle traps were placed in 13 counties with one trap being positive containing 1 of this species at the Cherokee County Club in Knoxville for a new state and county (Knox) record. All traps for pine shoot beetle were negative in 1995.

One pink bollworm was caught in Lake County off of Bluebank Road near the Keef/Wynnburg Road intersection. Nine sweet potato weevils were caught in a pheromone trap in a field in the Belleview community in Lincoln County.

A total of 19,366 traps were placed for gypsy moth in 1995 with 295 caught in 30 counties. Aerial spray projects in Grainger county (Joppa/Washburn), Rhea County (Laurel Brook) and Unicoi County (Erwin) totaled 40,065 acres sprayed twice.

ANALYSIS OF BODY COLOR AND SIZE IN *ANTHONOMUS GRANDIS* IN WESTERN TENNESSEE

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[2]Department of Biology, Rhodes College, Memphis, TN 38112

An investigation of body color and body size in the cotton boll weevil, *Anthonomus grandis* Boh., was done on weevils collected manually and in pheromone traps in western Tennessee in Tipton-Haywood, Gibson-Obion, Fayette, Dyer, Madison, and Lauderdale Counties. Three distinct color patterns, ebony, bronze, and red, were found and two body sizes were seen. The weevils from the various counties were classified as to color and size. The color data were subjected to Hardy-Weinberg equilibrium analysis and statistically tested with Chi Square. The results showed that the deviation from expected for the individual counties were all out of Hardy-Weinberg equilibrium ($P>.001$). Compared to expected, the observed frequencies for ebony and red were found to be low, while the frequency of bronze was found to be high. The results for body size showed that there are two different sizes of weevils. Reasons for the unexpected deviation in color and the differences in size are discussed.

TIMING AND CONTROL OF *PROTEOTERAS AESCULANA* RILEY (LEPIDOPTERA:TORTRICIDAE) IN RED MAPLE.

Frank Hale and M. Halcomb
The University of Tennessee Agricultural Extension Service
Nashville and McMinnville, TN, respectively

The destruction of the terminal bud or shoot of red maple, *Acer rubrum*, by a shoot-boring caterpillar, *Proteoteras aesculana* Riley, produces a forked double leader. This damage is a major impediment to the production of high quality red maple in Tennessee. *P. aesculana* have one generation per year. They are suspected to overwinter as early instar larvae by excavating terminal buds as does *Proeoteras moffatiana* Fernald. Previous studies have shown that the phenological stage of the red maple tree where the larvae enter the shoot is soon after the first two pair of leaves have emerged. A test was designed to see if control could be achieved by either applying a systemic insecticide prior to bud break or by applying a carefully timed spray in the early spring before the first signs of borer damage to new growth occur. The systemic acephate insecticide, Pinpoint 15G (13.2 lbs./acre), was sidedressed in a shallow furrow to one side of the row which was then covered with soil on April 4, 1995. The tree phenology ranged from tight bud to green tip. The other three insecticides applied as foliar sprays on April 21 were Orthene T & O 75 SP (1.33 lb/100 gal.), Merit 75WP (140 gm./100 gal.), and Talstar T& O 10WP (96 oz./100 gal.). The Merit 75WP rate of 140 gm./100 gal. was 10 times the label rate due to a error in calculating rates. The foliar sprays were applied at a 25 gal./acre rate using a

CO_2 compression sprayer operating at 40 pounds per square inch, equipped with two TXVS-18 hollow cone nozzles. The treatments of 35 feet of row were replicated 4 times. The phenology of the trees on April 21 ranged from green tip to three pair of leaves. A thorough complete tree inspection of all the trees in each treatment was made on May 3 for borer damage. Infested shoots were beginning to wilt and the leaves were turning dark brown. A small ball of insect frass and silk was usually found extruding from a small hole in the shoot. The mean number of damaged shoots per treatment was 59.75 for Orthene, 58.50 for Control, 49.50 for Merit, 25.75 for Pinpoint and 6.75 for Talstar. Using the General Linear Model and the Duncan's Mean Separation Procedure in SAS, Talstar was significantly different from the Control, Orthene and Merit treatments. Merit and Pinpoint were not significantly different although it should be restated that Merit was inadvertently applied at 10 times the label rate. There was no significant difference between Pinpoint and Talstar.

Beech Bark Disease Complex in the Great Smoky Mountains National Park

J. F. Grant, R. A. Vance, and M. T. Windham
Presented by B. Kauffman
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Knoxville, Tennessee 37901-1071
and
Tennessee Department of Agriculture
Division of Forestry
Nashville, TN 37204

American beech, *Fagus grandifolia* Ehrlich, in eastern North America are currently threatened by the devastating beech bark disease. This disease is caused by the fungal pathogens, *Nectria coccinea var. faginata* Lohman, Watson and Ayers, and *Nectria galligena* Bres., which infect trees that are predisposed by infestations of beech scale, *Cryptococcus fagisuga* Lindinger. In 1993, beech bark disease was discovered in the Great Smoky Mountains National Park (GSMNP).

In 1994, a 2-year cooperative research project involving the National Park Service and the University of Tennessee Agricultural Experiment Station was initiated to study several aspects of beech bark disease in the GSMNP. One objective of this research was to initiate long-term monitoring of incidence and distribution of beech scale and beech bark disease in permanent plots in the GSMNP. Additional objectives of this research included monitoring the life history and seasonal incidence of beech scale, and identifying natural enemies of this insect present in the GSMNP.

The overall status of beech scale has not changed dramatically in the permanent plots during this investigation. However, the overall incidence and levels of *Nectria* spp. have consistently increased during this study. This scale species was present in all permanent plots and at relatively

high incidence in all but one plot. Life history and seasonal incidence of beech scale were monitored at two locations in the GSMNP, from February 1994 to June 1995. During this investigation, the greatest number of beech scale eggs were collected in July and August 1994. The peak period for dissemination of beech scale occurred in September 1994, when the greatest number of crawlers were collected. Few natural enemies of beech scale were observed in the GSMNP during this research. Monitoring for natural enemies of beech scale was conducted at four locations. Trapping for parasitoids of beech scale was conducted from May to September 1994, and no parasitoids were captured. Visual observations for arthropod predators of beech scale also were conducted from May to September 1994, and one predator, *Trombidium* sp., was documented to feed on beech scale.

The absence of parasitoids impacting beech scale populations, the limited diversity of predators of the scale, and the current success of this pest species indicate that beech scale will continue to threaten American beech in the GSMNP. Data from this research provide base-line information needed for development, evaluation, and implementation of strategies for maintenance and control of beech scale in the GSMNP.

TENNESSEE ENTOMOLOGICAL SOCIETY

Minutes of the Board of Directors' Meeting

October 19, 1995

President Snodderly convened the Board meeting at 10:20 a.m. at the Ramada Inn South (Harding Place and I-65). Minutes of the August 16 meeting were read and corrected. Barton moved (Grant seconded) that the minutes be approved as read and corrected. The motion passed.

Barton presented a written Treasurer's report. He indicated that a CD had been purchased. The interest rate is 5.5%, but the yield should be 5.6% (last year it was 5.7%). The interest paid on the CD was $57.05 and IRS may expect TES to pay taxes on the interest earned. Patrick moved (Haun seconded) that the Treasurer's report be accepted. The motion passed.

Awards Committee chairperson Grant indicated that there was a recipient for the Howard Bruer award, the graduate student award would be presented during the meeting, a plaque will be presented to Doris Caldwell in appreciation for her work in support of TES, and an individual will be awarded the R. E. Caron Outstanding Entomologist Award for the first time this year.

Constitution Committee chairperson Burgess suggested changes in the Operating Procedures Manual. Shaded areas in the OP Manual indicate changes, lines drawn through indicate deletion. Discussion of several changes followed. Patrick moved (Barton seconded) that the changes be approved as discussed. The motion passed.

Local Arrangements chairperson Bogard indicated everything was in place for a good meeting. Additional name tag holders need to be purchased for TES. Barton moved (Haun seconded) that Bogard be authorized to purchase the needed holders.

Membership Committee chairperson Grant called attention to the display poster used at other meetings to generate interest in the TES. This has already been used at the PCO annual meeting.

Barton presented a report from the Nominating Committee. Positions to be filled are the President-Elect and two members-at-large.

Lambdin presented the Program Committee report. The meeting program was prepared at no cost to TES, having been generated on a color printer at UT. The highlight of the program will be the keynote speaker, Dr. William Bass, speaking on 'Forensic Entomology'.

Editor Gray Haun presented a report from the Publications-Editorial Committee. The cost of printing the Firefly was much higher than last year due to inclusion of the Constitution and Operating Procedures.

Publicity Committee Chair Williams indicated that news releases will be distributed to news media across the state. A question was raised concerning pre-meeting publicity. Williams indicated he had a camera here to take pictures of award winners.

There being no further business, President Snodderly called for a motion to adjourn the meeting. Patrick moved (Haun seconded) that the meeting be adjourned. The motion passed at 11:35 a.m.

Gary L. Lentz
Secretary
Tennessee Entomological Society

TENNESSEE ENTOMOLOGICAL SOCIETY

Minutes of the Annual Business Meeting
October 20, 1995

President Lynn Snodderly called the meeting to order at 8:35 a.m. at the Ramada Inn South (I-65 and Harding Place) in Nashville. The assistance of personnel from TDA for helping with registration was acknowledged with thanks.

Steve Murphree announced the sign up sheet from the state zoologist David Weathers (associated with the Tennessee Natural Heritage Program) who wants to work with entomologists across the state.

Minutes of the previous meeting were published on pages 22-23 of the Firefly. Secretary Lentz moved (Nabors seconded) that the minutes be approved as published. The motion carried.

Treasurer Barton distributed copies of the Treasurer's report. The C.D. that matured yesterday earned $57.05 in interest and the Society may have to pay taxes on that earning. He reported that the Auditing Committee examined the books yesterday. Harp moved (Nabors seconded) that the Treasurer's report be accepted. The motion passed.

Joe Dunn reported on incorporation of TES as a non-profit organization. An organization would have to register its charter stating name of organization, purpose, officers (who can sue or be sued). Cost for filing charter is $100. An application for a name search must be filed (cost $20). An additional $20 fee is to be paid. An annual report is to be filed (Cost $20). A lawyer should look over the charter, application and report. Dunn suggested the Treasurer should pay the interest and be given 30% of the interest and not bother to incorporate.

Dunn also suggested there be an amendment to the Constitution which would spell out the method of dissolution of TES at any future time (disposition of funds).

Nabors moved that the C.D. monies be put back into the checking account. There was no second to the motion. The C.D. is in the TES name. Lentz moved (Lambdin seconded) that the Treasurer check with the IRS, pay any taxes due and list that as an expense in the Treasurer's report. The Board will determine the disposition of the C.D. after the Treasurer obtains information from the IRS. The motion passed.

Chairman of the Auditing Committee Lentz reported that the Committee composed of Cletus Youmans and Jim Eisler examined the receipts and books and found that the accounts reconciled. Lentz moved (Lambdin seconded) that the Auditing Committee report be accepted. The motion passed.

Awards Committee Chairman Grant recognized the Committee members Steve Murphree, Jim Keener, Cletus Youmans, Ray Nabors and Reid Gerhardt. The Howard Bruer Award recipient for 1995 is George Carroll of Anderson Co. Judges for the Student Paper Competition were Frank Hale, Steve Murphree and Larry Latson. The Student Paper Award winner was Kenneth Copley.

Program Chairman Lambdin recognized Doris Caldwell for her dedicated service and significant contributions to the Society and especially the outstanding work on the Firefly over the years. She was presented a plaque of appreciation from the Society. Appreciation was also expressed to Dr. Carroll Southards, Head of the Department of Entomology and Plant Pathology, UT, for allowing Doris the time to come and receive the award of appreciation.

Chairman Grant then described the Richard E. Caron Award for the Outstanding Entomologist. The first recipient of this award was Professor Harry E. Williams, recently retired Extension Entomologist from UT. During his time at UT, Harry Williams touched a lot of individuals at various levels from 4-Hers in the State, to professionals in teaching and research, to individuals in the pest control industry, as well as the beekeepers across the State and also individuals in surrounding states who utilize his extension materials.

Constitution and Operating Procedures Committee Chairman Burgess reported that while no changes were made in the Constitution, some changes were made in the Operating Procedures Guide. Secretary Lentz asked the membership to study the procedures and bring needed changes to the attention of the committee.

Local Arrangements Committee Chairman Bogard expressed appreciation to his committee composed of Steve Powell, Lee Greer, and Steve Murphree.

Prediction and Evaluation Committee Chairman Kauffman had no report to present.

Program Committee Chairman Lambdin thanked those who contributed to the program, especially those six students. He expressed thanks to committee members Lee Holt, Jerome Grant, Bill Shamiyeh and Phillip Roberts. He also reminded participants of the need to get paper abstracts in for the Firefly soon.

Publication and Editorial Committee Chairman Haun had to attend another meeting and could not present a report.

Publicity Committee Chairman Williams indicated there would be news releases sent out across the state.

President Snodderly called for Old Business. Secretary Lentz expressed appreciation on behalf of the Society to Cletus Youmans for sponsoring the student award dinners.

President Snodderly called for New Business. Nominating Committee Chairman Barton presented the committee's nominees for Member-at-Large and President-Elect. Member-at-Large nominees were Steve Powell, Jim Bogard, Annie Self and Jimmy Cagle. Two of these were to be elected. Motions were moved, seconded and passed that the membership accept these nominations. President-Elect nominees were Steve Murphree, Cletus Youmans and Frank Hale. Steve Powell and Jim Bogard were elected Members-at-Large. Frank Hale was elected President-Elect.

Membership Committee Chairman Patrick indicated that the new TES brochure is completed and available for distribution. The TES informational poster by Jerome Grant was recognized.

Past-Presidents of TES escorted President-Elect Lambdin to the podium where President Snodderly presented him the presidential gavel. President Lambdin presented Past-President Snodderly a plaque of appreciation. President Lambdin recognized the Membership Committee for their work on the brochure and the poster which will promote entomology in the state and attract new members to the Tennessee Entomological Society. He also expressed appreciation to the Program Committee and the Local Arrangements Committee for putting together a successful meeting.

The meeting was adjourned at 9:35 a.m.

Gary L. Lentz
Secretary
Tennessee Entomological Society

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the Board of Directors Meeting
October 20, 1995

President Lambdin called the meeting to order at 11:00 a.m. Treasurer Barton indicated we have nine (9) new members of the TES. He moved (Bogard seconded) that these new members be accepted by the Board. The motion passed.

Local arrangements for the 1995 meeting were discussed. The facilities for this meeting were quite adequate. Lentz moved (Barton seconded) that the Local Arrangements Committee negotiate to meet at the Ramada Inn South (at I-65) in 1996. President Lambdin asked about the meeting date for 1996. The third Thursday and Friday (October 17-18, 1996) appeared to be adequate.

President Lambdin asked if we could have the social mixer in 1996. Bill Shamiyeh was appointed Local Arrangements Chairman and would be asked to coordinate the mixer activities.

The Committee assignments were discussed. The following chairpersons were appointed, pending acceptance.

Auditing	-	Gary Lentz
Awards	-	Steve Hamilton
Constitution	-	Gene Burgess
Program	-	Frank Hale
Prediction, Evaluation	-	Ray Nabors
Publicity	-	Steve Murphree
Nominating	-	Jim Eisler

The current Nominating Committee failed to appoint the Editor for a second 3-year term. Gray Haun will be asked to serve for an additional year and then be elected for a 2-year term in 1996. The editor's term did expire in 1995.

The meeting was adjourned at 11:45 a.m.

Gary L. Lentz
Secretary

TENNESSEE ENTOMOLOGICAL SOCIETY

Treasurer's Report
October 1995 - August 1996

Books and Records audited 10-19-95 by Auditing Committee (Gary Lentz, Chairman)

Balance on hand 10-19-95

Checking	$3538.68
CD #16518	$1057.05
TOTAL	$4595.73

Number of pins on hand 10-19-95 16

DISBURSEMENTS

Kinko's (Treas. Report & Reg. Receipts)	($ 19.17)
Office Max (Name tag holders)	($ 56.28)
Kenneth Copley (Student Award)	($ 50.00)
Ramada Inn South (Doris Caldwell's Room)	($ 51.64)
Ramada Inn South (Mtg. Rm., Coffee, OJ)	($ 383.04)
Gray Haun (Firefly Printing)	($ 289.00)
Dr. William Bass (Mileage & per diem)	($ 209.92)
Dr. Jerome Grant (Plaques)	($ 112.20)
TOTAL DISBURSEMENTS	**($1171.25)**

INCOME

39 Reg. Dues & Reg.	$ 975.00
1 Late Dues	$ 5.00
1 Late Dues & Reg.	$ 25.00
2 Reg. Dues (New Members since '95 Mtg.)	$ 10.00
Cash Donation (Joe Dunn)	$ 5.00
9 Student Dues	$ 9.00
2 Pins	$ 20.00
1 Corp. Dues	$ 25.00
1 Corp. Dues & Reg.	$ 45.00
TOTAL INCOME	**$1119.00**

BALANCE ON HAND

Number of pins on hand 16

Checking Account	$3486.43
CD #16518	$1057.05
TOTAL ASSETS (8-9-96)	**$4543.48**

Respectfully Submitted
Harvey E. Barton, Treasurer

ATTENDANCE ROSTER OF THE 1995 ANNUAL MEETING OF THE TENNESSEE ENTOMOLOGICAL SOCIETY

MEMBER	AFFILIATION	LOCATION
	Honorary Members	
Dunn, Joe C.	American Cyanamid (Ret.)	Nashville, TN
	Regular Members	
Bancroft, Harold	Univ. of Memphis	Memphis, TN
Barton, Harvey E.	Arkansas State Univ.	Jonesboro, AR
Biggers, Charles	Univ. of Memphis	Memphis, TN
Bogard, James B.	TN Dept. Agri.	Nashville, TN
Burgess, E. E. (Gene)	Univ. of TN	Knoxville, TN
Cagle, Jimmy	TN Dept. Agri.	Winchester, TN
Chaudhary, Hans R.	TN Dept. Agri.	Harriman, TN
Cole, Bruce A.	TN Dept. Agri	McMinnville, TN
Darielson, Karen	TN Dept. Agri.	Old Hickory, TN
Davis, Sylvester	TN Dept. Agri.	Mt. Juliet, TN
Eisler, Jim	TN Dept. Agri.	McMinnville, TN
Gallimore, Dale	TN Dept. Agri.	Cottage Grove, TN
Grant, Jerome F.	Univ. of TN	Knoxville, TN
Hale, Frank	UT Ag. Ext.	Nashville, TN
Hamilton, Steven W.	Austin Peay St. Univ.	Clarksville, TN
Harp, George	Arkansas State Univ.	Jonesboro, AR
Haun, Walker G. (Gray)	TN Dept. Agri.	Knoxville, TN
Heery, Frank	TN Dept. Agri.	Harrison, TN
Kauffman, Bruce W.	TN Dept. Ag. (Forestry)	Nashville, TN
Keener, Jim	TN Dept. Agri.	Knoxville, TN
Lambdin, Paris	Univ. of TN	Knoxville, TN
Latson, Larry N.	David Lipscom Univ.	Nashville, TN
Lentz, Gary L.	Univ. of TN	Jackson, TN
Milam, R. G.	USDA	Nashville, TN
Murphree, Steven C.	Belmont Univ.	Nashville, TN
Nabors, Ray A.	Univ. of MO	Portageville, MO
Patrick, Russ	Univ. of TN	Jackson, TN
Powell, Steve D.	TN Dept. Agri.	Nashville, TN
Roberts, Phillip M.	Univ. of TN Ext.	Jackson, TN
Self, Annie	TDA Plant Indust.	Nashville, TN
Shamiyeh, N. B.	Univ. of TN	Knoxville, TN

Regular Members (Cont.)

Simms, G. Renee	TDA	East Ridge, TN
Snodderly, Lynn J.	TN Dept. Agri.	Knoxville, TN
Southards, Carroll	Univ. of TN	Knoxville, TN
Stebbins, Tom	TN Dept. Agri.	Nashville, TN
Stewart, Randall	TN Dept. Agri.	Manchester, TN
Warren, Gerald	TDA Plant Indust.	McKinzie, TN
Watson, Charles Jr.	Aquatic Resources Ctr.	Franklin, TN
Williams, Harry E.	Univ. of TN (Ret.)	Knoxville, TN
Womble, Aaron	Valent USA	Germantown, TN

Student Members

Bilbrey, James	Univ. of TN	Knoxville, TN
Copley, Kenneth J.	Univ. of TN	Knoxville, TN
Marsland, Eric John	Univ. of TN	Knoxville, TN
Noon, William	Univ. of TN	Knoxville, TN
Sherman, Randy	Univ. of TN	Knoxville, TN
Silas, Kelly T.	Univ. of TN	Knoxville, TN
Stumpf, Christof	Univ. of TN	Knoxville, TN
Wiggins, Greg	Univ. of TN	Knoxville, TN
Williver, Cindy	Univ. of TN	Knoxville, TN

Sustaining/Corporate Members

Lee Greer	Valent Corp	Dunlap, TN
Clete Youmans	American Cyanamid	Dyersburg, TN

BOARD OF DIRECTORS

President - Lynn Snodderly
Past President - Russ Patrick
President Elect - Paris Lambdin
Secretary - Gary Lentz
Treasurer - Harvey Barton
Editor - Gray Haun
Historian - Harry Williams
Member-at-Large - Ray Nabors
Member-at-Large - Alan Hopkins

COMMITTEES: 1994 - 1995

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Gary Lentz, Chairman
Cletus Youmans
Jim Eisler

AWARDS
Jerome Grant, Chairman
Steve Murphee
Reid Gerhardt
Jim Keener
Cletus Youmans
Ray Nabors

CONSTITUTION
Gene Burgess, Chairman
Gray Haun
Ray Nabors

LOCAL ARRANGEMENTS
Jim Bogard, Chairman
Steve Powell
Lee Greer
Steve Murphree

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Ray Nabors
Phillip Roberts
Jimmy Cagle
Russ Patrick
Bill Shamiyeh
Steve Powell

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Paris Lambdin, Chairman
Lee Holt
Jerome Grant
Bill Shamiyeh
Phillip Roberts

PUBLICATION/EDITORIAL
Gray Haun, Chairman
Ray Nabors
Lynn Snodderly
Jim Keener
Jerome Grant

PUBLICITY
Harry Williams, Chairman
Gene Burgess
Bill Shamiyeh
Russ Patrick

Tennessee Entomological Society

Prediction and Evaluation

Committee Report

October 20, 1995

Bruce Kauffman - Chairman
Committee Members:
Ray Nabors
Phillip Roberts
Jimmy Cagle
Russ Patrick
Bill Shamiyeh
Steve Powell

INSECT PROBLEMS - 1995

Bill Shamiyeh
The University of Tennessee
Department of Entomology and Plant Pathology

SMALL GRAINS - WHEAT

Cereal Leaf Beetle: Infestation levels were light in Knox County and Middle Tennessee.

Aphids: Populations were light.

FORAGE CROPS - ALFALFA

Alfalfa Weevil: Alfalfa weevil larvae counts were moderate in plots in Springfield and Springhill averaging 12 larvae/sweep.

FIELD CROPS - FIELD CORN

European Corn Borer: Infestation levels were light in Middle and East Tennessee.

Fall Armyworm: Populations were well below the economic threshold in Springfield and Greeneville. No insecticide applications were necessary.

TOBACCO

Tobacco Aphid: Population densities of the red form were heavy in East Tennessee with development of the sooty mold fungus. In Middle Tennessee aphid populations were moderate requiring only one insecticide application.

Flea Beetles: Populations reached threshold densities during the growing season at both locations.

Budworms and Hornworms: Budworm populations were above the economic threshold in Greeneville and Springfield requiring one insecticide application. Hornworm populations were light at both locations.

VEGETABLE CROPS: Snap Beans

Mexican Bean Beetle: Low population densities early in the season becoming heavier in late July and early August.

European Corn Borer: Corn borer population densities were light during the growing season.

Broccoli And Cabbage

Worm Complex: Pre-treatment counts at Crossville averaged one worm /plant in broccoli and in cabbage late in the growing season during the growing seasons.

Sweet Corn

Corn Earworm: Earworm populations at Crossville were moderate during both growing seasons. Fall Armyworm populations were very high in late planted sweet corn during the 1995 growing season.

Tomato

Early and Late Blight: Early blight disease incidence and severity were very high; the disease was more destructive than late blight and was hard to control with conventional control measures and weekly spray schedules during the 1995 growing seasons.

Fruit Trees

Japanese Beetle: Beetle populations were very light at Crossville with very little defoliation of apple trees and ornamentals in 1995.

Mites: Two-spotted spider mite populations were high on apple trees late in the season averaging about 110 mites/leaf in 1995. One miticide application was sufficient.

Kelthane 50WP is not as effective in mite control as it was two years ago suggesting a possible resistance problem.

INSECT PROBLEMS - 1995

Russ Patrick
The University of Tennessee
Extension Entomologist

Corn

European corn borer: Very few infestations for 1995.

Black cutworm: Several locations in the state had treatable levels.

Fall armyworm: None reported.

Wheat

Cereal leaf beetle: Several counties had treatable levels.

True Armyworm: Several counties had damaging populations which had to be treated.

Stored Grain

Rice weevil, Indian meal moth

Saw-tooth grain beetle: Four beetles were found in many bins across the state. Pretreatment of bins is being emphasized to prevent pests in stored grain.

TENNESSEE SOYBEAN INSECT PEST REPORT - 1995

Phillip Roberts
The University of Tennessee
Extension Entomologist

Insect pest pressure was light on Tennessee soybeans during 1995. With the exception of a small percentage of the acreage, insecticides were not needed for pest control.

Grasshoppers were problems in a few isolated areas, mostly on double crop soybeans following wheat. Some problems with Mexican bean beetle and bean leaf beetle were reported in Middle Tennessee. Foliage feeding caterpillars were present in most fields but did not reach threshold levels. Stink bugs were also present in many fields, but practically no treatments were made for this pest. A few fields in northwest Tennessee were treated for corn earworm.

Dectes stem borer infestations were not as widespread as in 1994. An Extension demonstration was conducted in Lake County and attempted to suppress Dectes infestations with a single application of Karate. Infestation rates were low, 4.3 % of the plants were infested in untreated areas compared with 2.7% infested plants where Karate was applied.

Painted lady caterpillars were observed feeding on soybean terminals in Lauderdale County. Although this is one of the most common butterflies in the world, it is only an occasional pest of soybeans.

Tennessee Agricultural Statistics reports that 1.05 million acres of soybeans were harvested in 1995 and projected yields at 31 bushels per acre.

TENNESSEE COTTON INSECT PEST REPORT - 1995

Phillip Roberts
The University of Tennessee
Extension Entomologist

The 1995 crop was very promising at the end of July. Based on crop conditions as of August 1, yields were projected at 664 lbs. lint per acre. However, excessive rainfall in early August, unusually heavy insect infestations, and a late season drought dropped yields to 575 lbs. lint per acre.

Thrips pressure was heavy across most production areas. A significant amount of the acreage had to be oversprayed for thrips control regardless of at-planting treatment. Problems with cutworms did not develop.

Very high populations of boll weevils were present in the fall of 1994. Coupled with the mild winter, high populations of overwintered boll weevils were present in June. Overwintered boll weevil sprays were used to suppress weevils and held populations below threshold levels until early to mid-August. We were fortunate in that a large percentage of the population emerged by late June. Overall, boll weevil damage was less than expected.

Plant bug populations were lower than normal and may have contributed to the high early season square retention. Aphid numbers built rapidly in late June and were beginning to be a problem. However, the pathogenic fungus caused aphid populations to crash in the second week of July which is earlier than normal.

Tobacco budworm pressure was intense over the southern half of the state. Bollworm moths and larvae were practically non-existent in cotton fields. In late June, tobacco budworm populations were heavier than normal in the southern tier counties. The second field generation was very heavy in late July and early August. Excessive rainfall during this period hampered control efforts and significant damage occurred in the southern counties. Acceptable control was only achieved when larvae less than 1/4 inch long were targeted. This flight (second field generation) appeared to be extended compared to previous years. Adult vial tests were conducted on the second generation on four occasions, and pyrethroid resistance levels were in the 25 percent range. The third field generation was even heavier and resistance to pyrethroids was more apparent. Shortage of insecticides forced many growers to continue the use of pyrethroids late into the season. Overall, control of tobacco budworm was acceptable at best.

Beet armyworms were not an economic concern in most areas. However, late in the season beet armyworms could be found at low levels in most fields. Fall armyworms were present at low levels in late July in some areas. Loopers caused problems in a few fields but were not widespread.

Producers will harvest an average but expensive crop in 1995. Although 700,000 acres of cotton were planted, only 660,000 acres will be harvested and yield 575 lbs. lint per acre.

TENNESSEE GYPSY MOTH PROGRAM - 1995

Steve Powell
The Tennessee Department of Agriculture
Plant Industries, P.O. Box 40627
Nashville, TN 37204

Executive Summary

Traps

A total of 19,366 traps were placed in Tennessee for the gypsy moth in 1995, including 4,695 eradication, 13,366 detection and 1,305 delimiting traps.

Moths

Two hundred ninety-five (295) moths were caught in 1995 in 30 counties (see attached map). This total reflected a reduction in the number of moths caught in comparison to 1994 (1,304 moths).

Table 1. Gypsy Moth Trap Catches - 1992 to 1995

	1992	1993	1994	1995
Total Catch Areas	36	53	63	75
New Catch Areas	23	41	44	56
# Moths	227	4,654	1,304	295
# Moths/Area	6.3	87.8	20.7	3.9
# Traps	8,376	9,662	13,101	19,366

Eradication Sites

Of the six areas that were infested in the State in April, 1995, three sites required aerial treatments. Projects in Grainger County (Joppa/Washburn), Rhea County (Laurel Brook) and Unicoi County (Erwin) totaled 40,065 acres sprayed twice. These treatments reduced the number of moths in each location to levels that will not require aerial treatment in 1996.

TENNESSEE GYPSY MOTH PROGRAM - 1995

Bruce W. Kauffman
Department of Agriculture, Division of Forestry,
P. 0. Box 40627, Nashville, TN 37204

Egg Mass Surveys

Egg mass surveys were carried out at nine locations in eight counties during the winter of 1994-95 (Cocke, Davidson, Grainger, Rhea, Rutherford, Sevier, Sullivan, and Unicoi Counties). These areas had multiple trap catches in 1994. Sites in Grainger, Rhea, and Unicoi Counties were positive. In addition, areas in Maury and Sevier Counties had multiple life stages discovered in the spring of 1995.

Eradication Sites

A total of 4695 traps were placed in seven eradication sites in 1995, totaling 243 square miles. These traps, caught 57 moths (1080 moths in 1994). Aerial treatments of Grainger, Rhea and Unicoi (Erwin) infestations totaled 40,065 acres sprayed twice. These treatments reduced moth catches in these areas.

The Grainger County infestation had 58 egg masses located on a two acre area. Ten egg masses were treated with a soybean oil product where masses were accessible by bucket truck or from the ground. An area of 38,894 acres was treated with two applications of Bt (Foray 48B) at 24 BIU's per acre undiluted from two Air Tractors and one Ag Cat beginning April 24 to May 5, 1995. Burlap bands (40) were monitored before and after the treatments, and 44 larvae were found on 11 trees. Ten sticky bands were also employed. Ground treatment of the most heavily infested areas was also accomplished with a mist blower using Bt (Foray 48B) during aerial treatments. A delimiting trapping grid was conducted over 340 square miles involving 3,593 traps (16 traps/square mile plus mass trapping). Seventeen moths were caught in 17 traps. Ground treatment plans are being discussed.

An egg mass survey in Rhea County (Laurel Brook) located eight viable and three spent masses. All of the eggs were sprayed with a soybean oil product from a ladder. This area was part of a site treated with Bt and diflubenzuron in 1992. An area of 308 acres was treated with two applications of the USDA gypsy moth virus product (1 X 1012) using a Cessna Ag Truck on April 22 and April 25, 1995. Rainfall started 20 hours after the first treatment and continued for a 12 hour period, totaling 8 tenths of an inch. Burlap bands (50) were monitored before and after the treatments and 140 larvae and one pupal case were removed from them. Two sticky bands were also employed. A delimiting trapping grid over nine square miles involving 342 traps (16 traps/square mile plus mass trapping) was conducted. Twelve moths were caught in nine traps with three multiple catches of two moths each. Treatment options are being discussed.

The Unicoi County (Erwin) infestation had one viable egg mass. An area of 1,070 acres was treated with two applications of Bt (Foray 48B) at 24 BIU's per acre undiluted from two Air Tractors on April

27 and May 5, 1995. Burlap bands (10) were monitored before and after the treatment, and no larvae were found. A delimiting trapping grid over 10 square miles involving 185 traps (16 traps/square mile plus mass trapping) was conducted. No moths were caught.

In June, 1995, one viable pupal case was found in Maury County (Neapolis) during trap placement in a trailer park. An area of six square miles was delimited with 154 traps (16 traps/square mile plus mass trapping). Nine moths were caught in five traps with two multiple trap catches. Ground treatment plans are being discussed.

Three larvae and one pupa were found on June 2, 1995 in Sevier County (Catlettsburg) under three of the eight burlap bands placed in May in Riverside Campground. The trapping involved an area of four square miles delimited with 109 traps (16 traps/square mile plus mass trapping). Four moths were caught in three traps (one multiple catch site). Ground treatment plans are being discussed. No moths were caught in the Blount County infestation (Townsend/Boat Gunnel Road) for the first year. Trapping will continue there in 1996.

An increase in the number of moths (10 moths and 2 multiple catches) caught in the Unicoi County (Scioto Road) infestation will necessitate an aerial treatment of pheromone flakes. This treatment will involve approximately 252 acres of private and USDA Forest Service lands. The area was treated with Bt in 1994.

Trapping

TDA Plant Industries under a cooperative agreement with USDA APHIS PPQ hired 14 individuals to trap one existing infestation (Blount), urban areas, campgrounds, mobile home sites and sawmills statewide. In addition, they delimited 52 sites covering 66 square miles. TDA Plant Industries hired an additional 27 persons under an agreement with the USDA Forest Service to delimit existing infestations in Grainger, Rhea, and two sites in Unicoi County. TDA Forestry under a cooperative agreement with USDA APHIS PPQ trapped one half of each of 93 counties in the state at the rate of one trap per four square miles. USDA APHIS PPQ personnel trapped Davidson and Shelly Counties exclusively.

Detection Site Trapping

A total of 13,366 traps were placed statewide in 1995 to discover new introductions of the gypsy moth into the State. These traps caught 68 moths in comparison to 1994 (59 moths). The State had more new introductions (56) this year than last (44) which will involve more delimiting grids in 1996. Four counties (Cannon, Cheatham, Dyer, and Pickett) trapped moths for the first time.

Delimiting Site Trapping

A total of 1,305 traps were placed in 52 delimiting sites in 1995. These locations evaluated sites where the gypsy moth was caught in 1994 but was not established (no other life stages were found). Fourteen (14) sites were positive with 170 moths caught in a total of 16 square miles (165 moths in 1994). There

were reductions in moths caught in delimiting trapping in Rutherford (Symrna) and Cocke (Newport) Counties since 1994.

The largest catch site was in Sullivan County (Bristol) at Avoca School where 109 moths were caught in one square mile. At this site, 13 egg masses and 1 pupal case were found. Ground treatment plans are being discussed. Other multiple catch sites were in Cocke, Cumberland/White, and Sevier Counties.

The Cumberland/White County (Eastland) area caught 29 moths in 6 traps (all multiples) of the 41 traps placed over two square miles. This site will involve more intensive trapping next year.

In 1996, 61 delimiting sites are proposed for trapping. Eleven areas in ten counties (Blount, Cocke, Cumberland, Grainger, Maury, Rhea, Sevier (2), Sullivan, Unicoi, and White Counties) will have egg mass surveys during the fall and winter of 1995-1996.

Eradication Site Trapping

Seven sites will be trapped in 1996 involving 161 square miles where gypsy moths were caught in 1994 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.

INSECTS AFFECTING NURSERY, SOD AND AGRICULTURAL CROPS IN TENNESSEE - 1995

Steve Powell
The Tennessee Department of Agriculture
Plant Industries, P.O. Box 40627
Nashville, TN 37204

Boll Weevil

The boll weevil (*Anthonomus grandis*) has been an agricultural pest of Tennessee since the early 1900's. A total of 20,940 acres of cotton were included in the 1995 Boll Weevil Eradication Program in Middle Tennessee. The eleven participating counties were Coffee, Franklin, Giles, Grundy, Lawrence, Lincoln, Maury, Moore, Rutherford, Warren, and Wayne.

Imported Fire Ant

Two species of the imported fire ant, *Solenopsis invicta* (red species) and *Solenopsis richteri* (black species), as well as their hybrid are established in parts of Tennessee. Inspections of nurseries, greenhouses, and plant dealers are made by the Tennessee Department of Agriculture (TDA), Division of Plant Industries (DPI), Plant Certification Section. This section also participates in survey, eradication, and suppression efforts against imported fire ants.

The following areas are under federal and state quarantine regulations to prevent the artificial spread of the imported fire ant into non-infested areas:

(1) Bradley County. The portion of the county southeast of Interstate 75, southwest of the Hiwassee River, northwest of U.S. Highway 11, and northeast of Tennessee Highway 308.
(2) Fayette County. The portion of the county south of U.S. Highway 64.
(3) Hamilton County. The portion of the county east of U.S. Highway 27, south of Interstate 24, and west of Interstate 75. Also, the portion of the county south of U.S. Highways 41, 64, and 72, and west of Tennessee State Road 38.
(4) Hardeman County. The entire county.
(5) Hardin County. The entire county.
(6) McMinn County. The portion of the county southeast of Interstate 75, southwest of Tennessee State Highway 163, northwest of U.S. Highway 11, and northeast of the Hiwassee River.
(7) McNairy County. The entire county.
(8) Wayne County. The portion of the county south of U.S. Highway 64. Also, the portion of the county west of longitude 87 degrees 55 minutes.

Since 1994, new introductions of imported fire ants outside the quarantined area have been reported in the following 25 counties: Benton, Blount, Bradley, Chester, Coffee, Davidson, Decatur, Dyer, Gibson, Hamilton, Henderson, Humphreys, Knox, Lewis, Madison, Marion, Monroe, Montgomery, Polk, Rutherford, Sevier, Shelby, Sumner, Washington and Warren.

Natural migration of imported fire ants now occurs in the following 16 counties: Bradley, Chester, Decatur, Fayette, Franklin, Giles, Hamilton, Hardeman, Hardin, Lawrence, Lincoln, McNairy, McMinn, Polk, Shelby, and Wayne.

New county records for *S. invicta* for 1995 include the following: Benton, Dyer, Lewis, and Sumner.

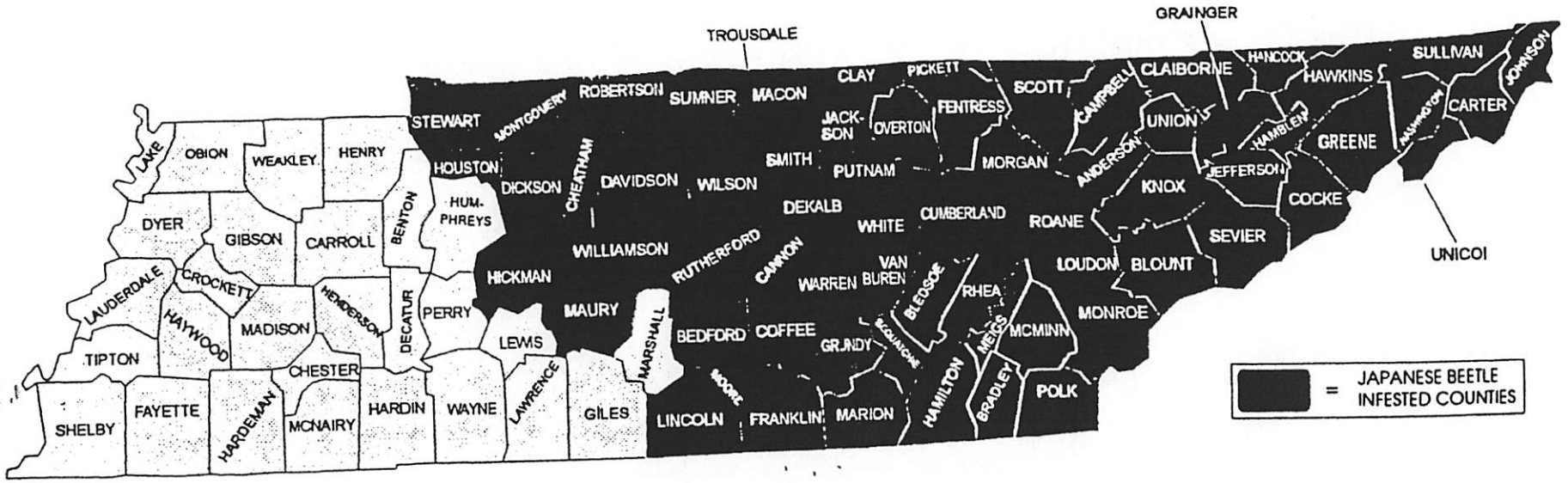
A new county record for 1995 is Henderson County.

Japanese Beetle

The Japanese beetle (*Popillia japonica*) became permanently established in the northeastern part of the State in the late 1960's. It continues to spread into more counties of West and Middle Tennessee. This year three Japanese beetles were trapped in Marshall County, and two were trapped in Lawrence County.

TENNESSEE JAPANESE BEETLE INFESTED COUNTIES

1995



Counties Listed Below are Generally Infested With Japanese Beetle

ANDERSON	CHEATHAM	DICKSON	HANCOCK	LINCOLN	MONROE	PUTNAM	SEVIER	UNION
BEDFORD	CLAIBORNE	FENTRESS	HAWKINS	LOUDON	MONTGOMERY	RHEA	SMITH	VAN BUREN
BLEDSOE	CLAY	FRANKLIN	HICKMAN	McMINN	MOORE	ROANE	STEWART	WARREN
BLOUNT	COCKE	GRAINGER	HOUSTON	MACON	MORGAN	ROBERTSON	SULLIVAN	WASHINGTON
BRADLEY	COFFEE	GREENE	JACKSON	MARION	OVERTON	RUTHERFORD	SUMNER	WHITE
CAMPBELL	CUMBERLAND	GRUNDY	JEFFERSON	MAURY	PICKETT	SCOTT	TROUSDALE	WILLIAMSON
CANNON	DAVIDSON	HAMBLEN	JOHNSON	MEIGS	POLK	SEQUATCHIE	UNICOI	WILSON
CARTER	DEKALB	HAMILTON	KNOX					

The two known isolated areas of Japanese beetle in West Tennessee appear to be growing. The I-40 Rest Stop area in Madison County caught 1147 beetles in trapping for 1995 compared to 733 in 1994. The number of beetles caught in the Bells, TN area (Crockett County) doubled this year to about 8000. In addition to these areas, Japanese beetles were trapped at plant dealerships in the following counties: Gibson, Henry, Madison, Shelby, and Weakley. The list of counties considered generally infested with Japanese beetle remains unchanged from 1994.

Oriental Beetle

A total of 25 oriental beetle traps were placed in 13 counties with one trap being positive containing 1 oriental beetle at the Cherokee Country Club in Knoxville for a new state and county (Knox) record for this species. Counties with traps placed were as follows: Anderson (1), Blount (2), Carroll (2), Cumberland (1), Fayette (2), Hardeman (1), Haywood (1), Henderson (2), Knox (2), Madison (3), Obion (2), Shelby (4), and Weakley (2).

Pine Shoot Beetle

The University of Tennessee Agricultural Extension Service in cooperation with USDA APHIS-PPQ hired 2 aides in 1995 to survey for pine shoot beetle damage in 5-10 areas per county where 25 or more pines per area were located. A total of 453 sites were surveyed in 52 counties - 13 counties in western Tennessee; 14 in central Tennessee and 25 in eastern Tennessee. No pine shoot beetle damage was found. Detections for this pest have been conducted in 82 counties since 1993 by one or two survey aides per year (15-25 counties/aide/year). All sites have been negative.

A total of 27 traps were placed in 20 counties in Tennessee for the first time in 1995 by TDA DPI with all traps negative. Counties with traps placed were as follows: Blount (2), Carter (1), Coffee (1), Davidson (2), Decatur (1), DeKalb (1), Fentress (1), Franklin (1), Hamilton (1), Lincoln (1), Madison (2), McMinn (1), Pickett (1), Putnam (3), Rutherford (2), Shelby (1), Tipton (1), Warren (2), Washington (1), and White (1). Additional trap locations were set by USDA APHIS-PPQ personnel.

Pink Bollworm

Three areas each covering a 1.5 mile radius were regulated for pink bollworm in Dyer County. A fourth location covering a 1.5 mile radius in Dyer and Lauderdale Counties was also regulated for this insect. Traps placed at these sites were negative for the pink bollworm for a second successive trapping season. It is anticipated that the quarantine covering these areas will be lifted later this fall.
It was incorrectly reported earlier in 1995 that no pink bollworms were captured statewide. A single moth was caught in Lake County in a USDA APHIS-PPQ trap off of Bluebank Road near the Keef/Wynnburg Road intersection. This location will be trapped in 1996 according to the USDA APHIS-PPQ protocol of one trap per four acres.

Sweet Potato Weevil

This June nine sweet potato weevils (*Cylas formicarius*) were caught in a pheromone trap in a field in the Belleview community (Lincoln County). Regulatory action was taken to destroy the plants in the field and prevent the spread of this insect pest to additional areas.

INSECTS AND DISEASES AFFECTING FOREST HEALTH IN TENNESSEE - 1995

Bruce Kauffman
Department of Agriculture, Division of Forestry
P.O. Box 40627, Nashville, TN 37204

Gypsy moth trapping caught 295 moths with 109 of the catches in one location in Bristol. Of the sites that had spray application this spring, Rhea County caught 12 moths; Grainger County had 14 moths and no moths were caught in Erwin in Unicoi County. Four other infestations were discovered this year in campgrounds in Sevier and Cocke Counties, in a trailer park in Maury County, and in a rural area of White County.

Defoliation by the eastern tent caterpillar increased in central and eastern Tennessee as did defoliation by the loblolly pine sawfly in scattered locations in central and western Tennessee. The first recent report of major defoliation by the Virginia pine sawfly occurred in Scott County. Red-headed pine sawfly defoliation increased in several locations on loblolly pine in central and western Tennessee in late summer.

In northeastern Tennessee, the sycamore lacebug and oak lacebug damage was at higher levels than last year which may impact tree growth. Black cherry in eastern Tennessee received more widespread defoliation by the cherry scallop shell leaf roller (*Hydria prunivorata*) especially in the northeastern area, while the hackberry butterfly defoliation was at lower levels in central Tennessee than last year.

A periodical cicada emergence occurred in Greene, Hawkins Sullivan, Unicoi, and Washington Counties in northeastern Tennessee for which there was no historical record. A hailstorm and three tornadoes (of the 56 sighted statewide in one day) caused hardwood timber damage this summer in four central Tennessee counties. High winds and saturated soils associated with Hurricane Opal combined to cause windthrow of scattered hardwoods and conifers in northeastern Tennessee. The white pine weevil damage in Cumberland County increased primarily on 20 foot trees, while the introduced pine sawfly was found for the first time in the county as well. Infestations of this sawfly were also detected in Williamson and Washington Counties. Japanese beetle infestations in counties along the advancing

edge in central Tennessee continue to have a major impact on fruit trees and some urban tree species in the area.

The yellow poplar weevil and bagworms caused less damage (under 30 percent) than last year. Inchworm populations were also down. A fall cankerworm infestation in Sullivan County had 30 percent defoliation of oaks and sugar maples.

Southern pine beetle populations were low or declining in the State. Only 83 spots were found in eight counties, none of which were epidemic. Most activity was in southwestern Tennessee where 2191 trees were killed (80 cords; 73 MBF). Attacks were focused on ice-damaged stands and lightning-struck trees. Black turpentine beetles were at higher levels in several locations in western and eastern Tennessee. Pine shoot beetle surveys in the state were negative. The Nantucket pine tip moth flight was one week earlier than last year (March 28 - 29) in Wilson County and the second flight peak occurred on June 14.

Urban yellow poplars were killed by *Xylosandrus* spp. ambrosia beetles and *Nectria* canker in both eastern and western Tennessee. Gall-forming wasp infestations were high on oak this year particularly those formed by *Neuroterus saltarius* on white oak leaves in northeastern Tennessee causing defoliation on some trees. The dusky birch sawfly (*Croesus latitarsus*) was also found more frequently in central and eastern Tennessee. The fall webworm caused light to moderate defoliation of various hardwoods statewide. Locust leaf miner damage was moderate to heavy in eastern Tennessee and in several central Tennessee locations.

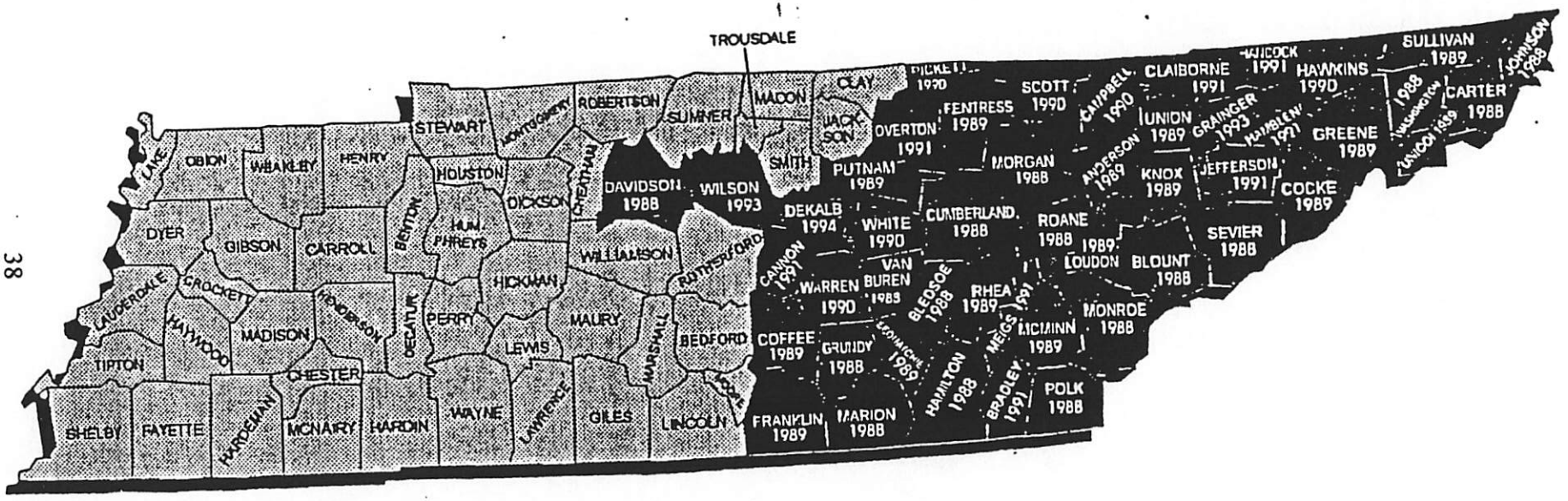
Drier weather conditions in late July and August favored the buildup of grasshoppers in scattered locations on the northern half of the Cumberland Plateau. Usually dominant oaks were defoliated less than 50 percent, but intermediate, suppressed, and understory oaks were affected to a greater degree. Nearly 1, 000 acres of oak timber were defoliated by walkingsticks in Pickett and Scott Counties in late summer and fall. Catalpaworm defoliation was also at higher levels in eastern and central Tennessee this year.

Spring flooding along the Mississippi River from Lake County to Shelby County was the worst since 1976. In some western Tennessee locations, this will mark the fifth or sixth consecutive year where water did not recede until July in bottomland hardwood stands. These wetter springs have also increased the amount of hardwood leaf disease on oak, maple, ash, black walnut, dogwood, and sycamore. The last four tree species were prematurely defoliated (20-100%) in central Tennessee by anthracnose infections.

Of the 757 trees in dogwood anthracnose plots monitored since 1990 in the eastern third of the State 90 percent were infected in 1995. Of these infected trees 26 percent of the trees were killed by the disease. Powdery mildew infections on hardwoods began earlier in the season and were more prolific than last year.

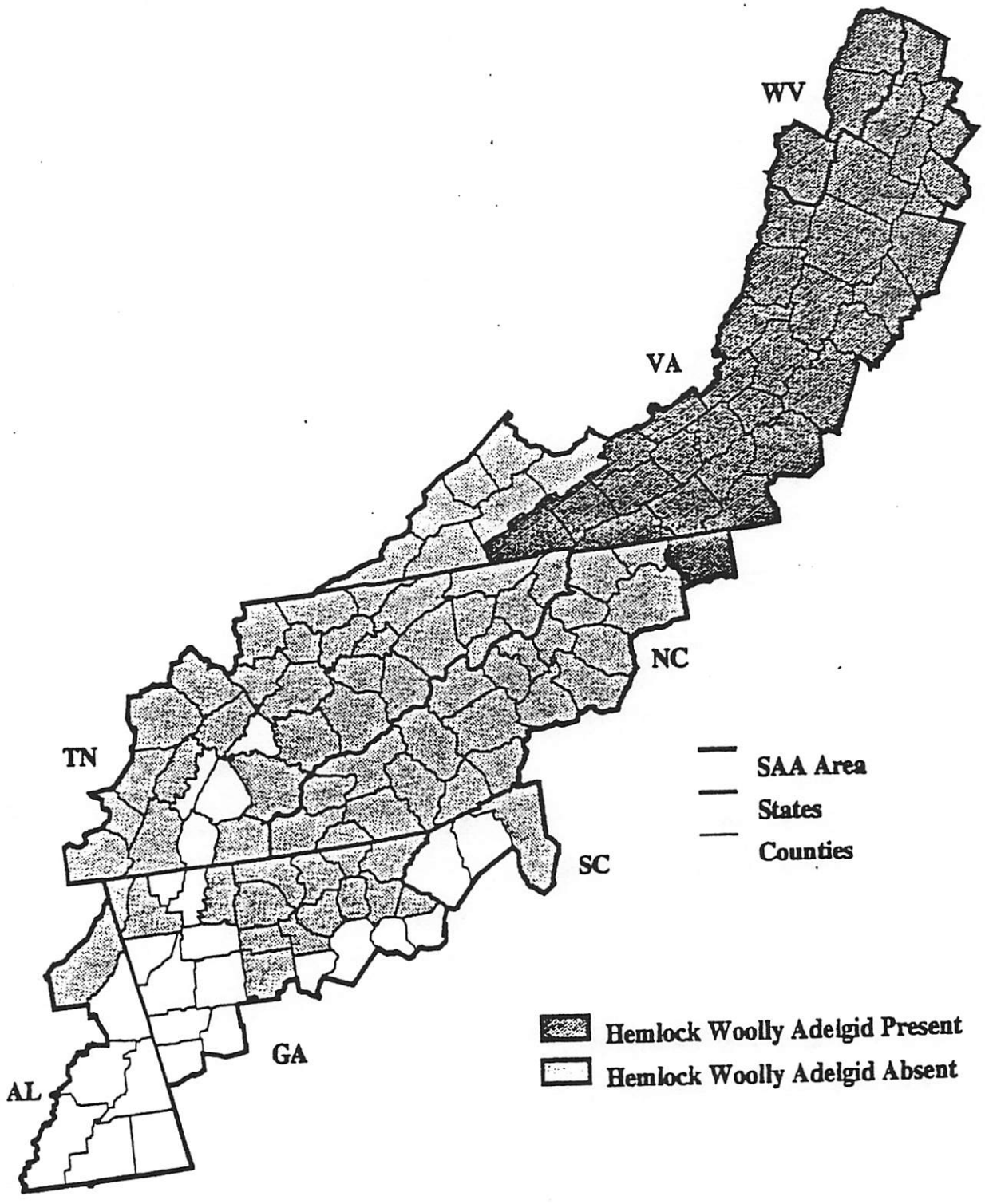
Coleosporium needle rust on southern yellow pines was also more common this spring than in 1994. More late summer rains increase this disease. Eastern white pines were apparently damaged by

DOGWOOD ANTHRACNOSE DISTRIBUTION AND YEAR FIRST DETECTED IN TENNESSEE -- December 1995



Discula destructiva. present in the county as confirmed by Cornell University. University of Tennessee confirmed Anderson, Blount, Cocke, Knox, Polk, Rhea, and Sevier Counties. The U.S. Forest Service confirmed Coffee, Franklin, Grainger, Sullivan, Unicoi, and Wilson Counties. These data are based on one positive leaf on one tree per county.

SOUTHERN APPALACHIAN ASSESSMENT DRAFT
DISTRIBUTION OF EASTERN HEMLOCK



ozone in scattered central and eastern Tennessee areas in late May and early June. This damage was more pronounced than in the last two years and occurred on forest trees as well as urban and Christmas trees.

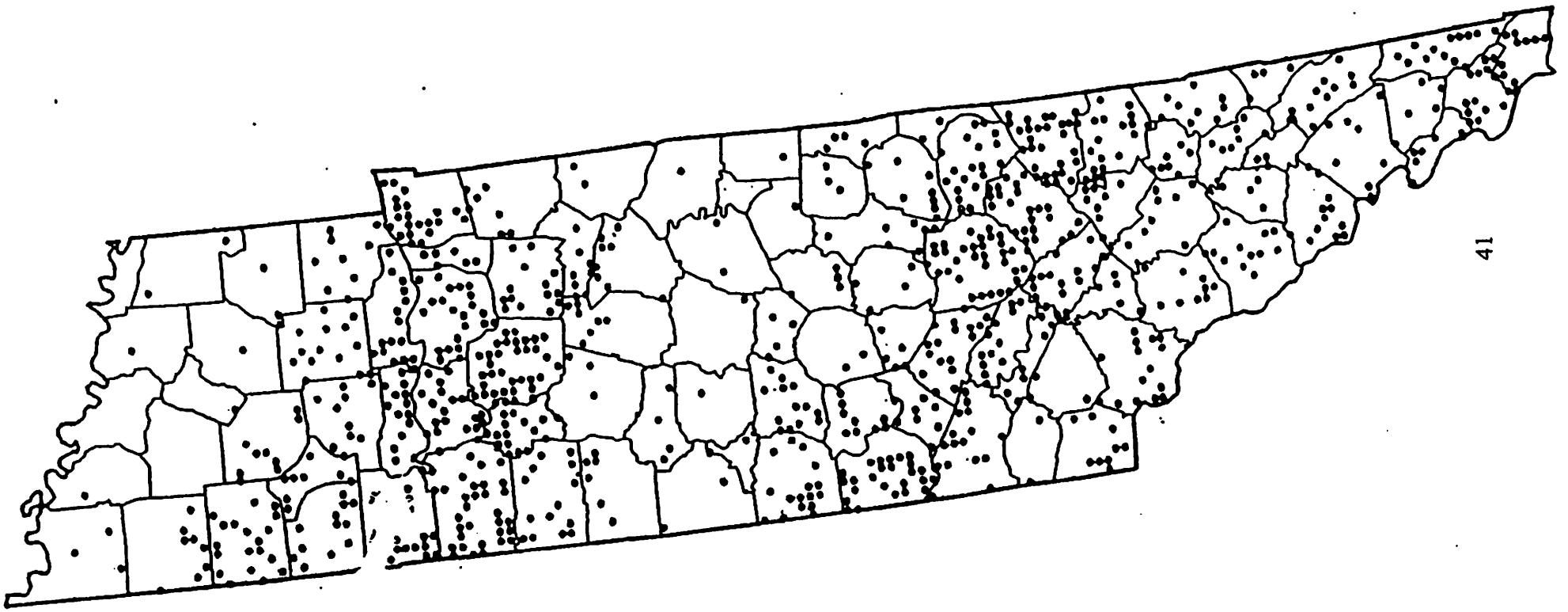
Pitch canker continues to be at epidemic levels on southern yellow pines in the eastern third of the State. Shortleaf pine appeared to be the most infected species through branch cankers in the upper crown. A Leyland cypress Christmas tree planting in Wilson County was infected with *Seiridium cardinale*. This canker disease caused two percent mortality and five percent stem defect. No infection was noted until "handles" were put on the trees, then the fungus moved into the new wounds.

A two and three year old Paulownia plantation in Monroe County had approximately 20 percent of the trees infected by *Fusarium solani*. This annual canker disease also affects other hardwoods such as yellow poplar when wounded or stressed by environmental agents such as drought. Larger trees should be able to "outgrow" the disease provided the stressing factors do not last for several consecutive years.

Oak wilt infections have continued for two consecutive years at higher levels in Greene and Washington Counties than at any time since 1981. Over 80 percent of the infected trees were new spots. More abundant rains during the growing season have reduced the number of oaks killed by the oak decline disease complex. However, a hot, dry period during the last of July and August in central and eastern Tennessee caused premature leaf drop of yellow poplar and leaf scorch and browning of dogwood and ash leaves.

Sugar maple decline in concert with Verticillium wilt was more common on urban trees in late summer this year. Some central Tennessee trees that died or are declining were stressed by heavy spring anthracnose infections of the leaves. Procerum root disease of eastern white pine was more prominent in some central and western Tennessee Christmas tree sites this year. It continued to be the number one killer of urban white pines across the State. One abandoned Scotch pine Christmas tree planting in Greene County had several trees killed by the pinewood nematode. This disease was more commonly found during the drought years of the 1980's.

Vulnerable Upland Oak Decline Plots Tennessee



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HISTORICAL NOTES

Presidents of the Tennessee Entomological Society (1973 - Present)

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

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

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 - '88	University of Tennessee
Richard Caron	'88 - '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 - '96	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

Editors of the Tennessee Entomological Society (1991 - present)

Editor	Term	Affiliation
Gray Haun	'91 - '92	TN Dept. of Agriculture
Gray Haun	'92 - '95	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.

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	'92 - '97	Univ. of Tennessee

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

Honorary Member	Year	Affiliation
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)

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 Co.
Jeremy Smith	1994	Savannah Co.
George Carroll	1995	Anderson Co.

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)

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

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 Chairman 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.

1. Dates ('94), ('95) refer to last meeting attendance or last dues payment. ($5.00 Regular, $1.00 Student, $25.00 Sustaining/Corporate).

2. H = Honorary Member

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Alan Hopkins, Miles Inc., Agri. Division

Clete Youmans, American Cyanamid

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:

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