

THE FIREFLY

Proceedings of the 1999 (Twenty-Sixth)
Annual Meeting of the
Tennessee Entomological Society



October 21-22, 1999
Belmont University
Nashville, Tennessee

Volume Fourteen

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Tennessee Entomological Society

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 made periodically in recognition of TES members who have distinguished themselves by making outstanding contributions to entomology in Tennessee.

Name and Address of Nominee _____

Telephone Number of Nominee _____

Brief Description of His/Her Qualifications for the Award

Please submit a minimum of three supporting letters from professionals familiar with the qualifications of the nominee. These and any appropriate descriptive material (description above or on a separate page, curriculum vita, or other biographical sketch) should be submitted to the Chair of the Awards Committee. Members of the Awards Committee will use this material to decide if the nominee should be recommended to the TES Board.

Name and Address of Nominator _____

Signature of Nominator _____

Telephone Number of Nominator: _____ **Date** _____

Please submit your nomination by **August 1, 2001** to:

Dr. Steven W. Hamilton

Department of Biology, Austin Peay State University, Clarksville, TN 37044

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**PROCEEDINGS OF THE TWENTY-SIXTH
ANNUAL MEETING
OCTOBER 21-22, 1999**

Tennessee State University
Nursery Crop Research Station
McMinnville, Tennessee 37110

BIOTECHNOLOGY FOR AGRICULTURE: TRIUMPHS AND SPEED BUMPS

Walt Mullins
Bollgard, Monsanto

Advancements made possible by biotechnology can significantly enhance the quality of life in many areas, including agriculture. Industry must pursue these benefits with the most responsible science available. Today's research reinforces the safety of biotechnology products in the marketplace, but we recognize that questions are being raised and they must be addressed. We also recognize that scientific understanding alone is not enough. We respect the fact that biotechnology also raises philosophical implications. These, too, must be addressed. The best way for biotechnology to fulfill its promise is for people to share their views, respect their differences and work together for future progress. And the biotech industry is committed to cooperating with people who are concerned in an attempt to answer questions and resolve uncertainties.

Biotechnology is becoming an important tool that can improve our quality of life in many ways, both now and in the future; from life-saving medicines to more nutritious foods. Discoveries in biotechnology allow for some key crops to have their own protection against insects and disease and, therefore, they can be grown using less crop protection chemicals. For example, we have developed cotton and corn that resist some destructive insects on their own. This allows farmers to choose the best combination of tools to control harmful pests and diseases. Through biotechnology, a beta-carotene- and iron-enriched "golden" rice is being developed. This may help give young children in developing countries the vitamin A their bodies need to help prevent serious vision problems or blindness, and sufficient iron to help prevent iron-deficiency anemia. Besides foods, biotechnology is bringing breakthroughs in health care. Since the initial production of human insulin to better treat diabetes, biotechnology continues to create more effective drugs and vaccines. These crop derived medicines would benefit hundreds of millions of people worldwide who suffer from devastating diseases such as heart disease, cancer, diabetes, Parkinson's, Alzheimer's and AIDS. And in the future, some applications of biotechnology will be used to make materials such as fibers for clothes from "renewable" resources like corn. Other applications will help reduce our dependence on oil and natural gas and could reduce water and energy use by as much as 50%. Among the many uses of biotechnology, food and agriculture applications are understandably of particular interest to society. It is important that quality information be available to the public to assist their understanding and to support effective dialogue and decision making.

HERBICIDE EFFECTS ON EARLY SEASON THRIPS MANAGEMENT PROGRAMS IN COTTON

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The research was conducted during the summer of 1999 at the West Tennessee Experiment Station in Jackson, Tennessee. The objective of the study was to evaluate two herbicides (Roundup Ultra 7 and Cotoran+Prowl+Dual) and seven insecticides for efficacy for early-season thrips control and effects on several growth parameters. Variables studied included plant height, leaf area, node of first position square, thrips damage, number of blooms per plant, and number of thrips (larvae and adults). The field was a split plot design with the two herbicides as the main plots and the seven insecticides as the subplots. In the conventional herbicide program, the Gaucho treatment showed significantly more leaf area (cm²) compared to the untreated check. In the Roundup Ultra 7 herbicide program, the Admire and Gaucho treatments had significantly more leaf area compared to the untreated check.

MOTH WARS, EPISODE I: TENNESSEE'S PHANTOM MENACE

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The gypsy moth, *Lymantria dispar* L., is one of the most serious defoliators of hardwood forests in North America. This insect is not native to the United States, but was accidentally released in 1869, in Medford, MA. Since then, it has spread throughout the northeastern United States. Tennessee will be prime habitat for the gypsy moth because more than one-half of the state is forested, 78% of which is composed of hickories and oaks. Once the gypsy moth becomes established, current control measures will no longer be economically feasible. To prepare for the future, we are searching for established biological agents that could be used to control gypsy moth populations.

A study was initiated to assess for predators and parasitoids of gypsy moth pupae and egg masses. Three sites were chosen in Scott, Knox, and Anderson Counties. Dead pupae and egg masses were placed in the field between 8/25/99 and 9/24/99 and were removed 24 hours after placement. Removed pupae and egg masses were transferred into individual rearing cups and were placed in a growth chamber (21°C) to monitor for parasitoids.

During this study, 123 ants representing 5 genera were collected from pupae and egg masses. Genera collected included *Leptothorax* (3%), *Formica* (1%), *Aphaenogaster* (43%), *Paratrechina* (42%) and *Camponotus* (11%). No parasitoids were found during this study. Further research is needed to gather seasonality data on ant predators and to assess other predators and parasitoids located in Tennessee.

**THE KAIROMONAL RESPONSE OF BROWN LACEWINGS
(NEUROPTERA:HEMEROBIIIDAE) TO THE SEX PHEROMONE
OF *MATSUCOCCUS* SPP. (HOMOPTERA: MARGARODIDAE)
IN PINE-DOMINATED FORESTS OF EAST TENNESSEE**

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A study was initiated in May of 1999 to assess the effectiveness of sex pheromones of *Matsucoccus matsumurae*, *M. feytaudi*, and *M. josephi* in attracting adults of Hemerobiidae. Sixty sticky traps equipped with rubber dispensers saturated with 500 μg of pheromone are being exposed at monthly intervals in mixed pine stands at six sites along an elevation gradient in the Great Smoky Mountains National Park and the University of Tennessee Arboretum. Preliminary data show that captured Hemerobiidae demonstrate a preference to the sex pheromone of *M. feytaudi* and are most abundant in stands of Table Mountain Pine, *Pinus pungens*, on dry, rocky ridges between 914 m and 1392 m. The capture of adult Hemerobiidae enables the study of the population trends of this predator and contributes to the appraisal of this predator in biological control programs.

**COLD TOLERANCE IN IMPORTED FIRE ANT SPECIES,
SOLENOPSIS RICHTERI, *S. INVICTA*, AND THEIR HYBRID**

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It was theorized that imported fire ants could not maintain infestations north of the -12°C minimum isotherm. They have, however, and continue to slowly expand their range northward.

There appears to be some geographical segregation of these fire ant species as the red occupies most of the southern states, the black locates at the northern border of the fire ant range, and the hybrid cuts a band of territory between the two. There has been speculation on the possibility of hybrid vigor increasing cold hardiness, which is expected to be an important factor in the survival and control of these ants within the northern boundaries.

Our objective is to assess the effects of season, species, and infection with *Thelohania solenopsae* on the cold hardiness of imported fire ants. These ants do not demonstrate freeze-tolerance; therefore, cold hardiness would be based on ability to acclimate to cooler temperatures and depress their supercooling point. We examined cold tolerance by determining the supercooling points and mortality of ants exposed to near and below freezing temperatures. Supercooling tests recorded data on individual alate females, large workers, and small workers across the three fire ant species. Results will be discussed.

THE STATUS OF THE JAPANESE BEETLE AND ASSOCIATED BIOLOGICAL CONTROL AGENTS IN EASTERN TENNESSEE

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Since its accidental introduction into the United States, the Japanese beetle (*Popillia japonica* Newman) has marched across the country at an alarming rate. First recorded in North America in 1916 near Riverton, New Jersey, the Japanese beetle is now established in 22 states east of the Mississippi River and isolated infestations have been reported in states west of the Mississippi. Without natural predators, parasitoids, and pathogens to control its population, the Japanese beetle has quickly become a serious agricultural pest in the United States. The grubs can cause annual monetary losses of 234 million dollars, with adults capable of causing an equal amount of damage.

Previous research evaluated the impact of the Japanese beetle in Tennessee on the impact of one of its natural control agents on beetle populations. No previous study has looked at the Japanese beetle and multiple aspects of natural control in Tennessee, specifically eastern Tennessee. This study will examine the incidence and seasonality of the Japanese beetle in eastern Tennessee, the incidence and seasonality of individual parasitoids and natural control agents of the Japanese beetle, and determine parasitism/infection levels of the Japanese beetle by control agents. If this study can demonstrate that one of the natural controls of the Japanese beetle is effective against this pest, this natural control may be able to be manipulated or supplemented to become more effective against the beetle.

GENERIC RELATIONSHIPS AMONG NORTH AND SOUTH AMERICAN PIT SCALES

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In a systematic revision of the North and South American pit scales (Hemiptera: Coccoidea: Asterolecaniidae) with emphasis on the subfamily Asterolecaniinae, 11 species new to science were described and illustrated, 3 species were merged, and 37 species were redescribed. A systematic key was produced that also included 8 recently described species. Genera present in the New World are *Asterodiaspis*, *Asterolecanium*, *Bambusaspis*, *Grammococcus*, *Neoasterodiaspis*, *Palmaspis*, *Planchonia*, and *Russellaspis*. A cladistic analysis of morphological characters of adult females using parsimony revealed a possible paraphyly of the genera *Asterolecanium* and *Palmaspis*.

DIVERSITY OF INSECTS ASSOCIATED WITH YELLOW POPLAR IN EAST TENNESSEE

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Insects associated with yellow-poplar at two sites (plantation and mixed hardwood) were surveyed in east Tennessee using three sampling methods: malaise trapping, canopy fogging, and direct sampling. Some 725 species representing 15 orders were identified. The lower canopy was 35% richer at the species level than the upper canopy. Only 13% of the families were unique to the upper canopy and there was an 80% overlap at the order level. The faunas differ at the species level with about 60% unique to the lower canopy and approximately 40% unique to the upper canopy. For example, 452 specimens of Apoidea were collected in the lower canopy and represented 20 species in five families, while only 36 specimens were obtained from the upper canopy that represented nine species and two families. Nearly 50% of the insect fauna at the plantation site consisted of Coleoptera, compared to only 30% of the insect fauna in the mixed hardwood forest site. The Coleoptera, Diptera and Hymenoptera taxa represented 90% of the fauna at both sites.

DIVERSITY AND SPECIES-ABUNDANCES IN A BAJA CALIFORNIA WRACK COMMUNITY

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As part of a larger study to examine the importance of wrack communities to vertebrate and invertebrate terrestrial consumers, the wrack community at Playa Pelón, an exposed beach with low algal shore input on Baja California's eastern coast, was evaluated with respect to species richness, diversity, and its species-abundance distribution [S(N)]. Fresh algal masses were collected from the sea and placed on the beach in discrete patches to simulate the deposition of algal wrack and allow for the colonization of intertidal detritivores. The wrack community was sampled using pitfall traps placed under the algal patches which were collected once a day for up to 11 days.

Pooling 531 samples over the summers of 1996-1998, the wrack community at Playa Pelón (N = 60,473) was found to have a species richness of $S = 83$ and a Shannon Index value of $H' = 1.62$. Of the primary species-abundance models discussed by May (1975), the observed S(N) of the wrack community was found to fit expected distributions derived from Fisher's log series ($X^2 = 9.28$, $df = 6$, $0.1 < P < 0.5$) and Preston's lognormal distribution ($X^2 = 1.34$, $df = 5$, $P > 0.9$), while expected values generated using MacArthur's broken-stick model did not fit the observed distribution ($X^2 = 84.45$, $df = 5$, $P \ll 0.001$). Compared to other studies of wrack faunas, the wrack community at Playa Pelón was found to be especially species-rich. No other study was found to exceed $S = 53$ for any single site and most studies had values of S between 21 and 28. However, using t -tests to compare Shannon indices among different sites, it was concluded that the Shannon Index value of the Playa Pelón wrack community can be described as "typical" of wrack communities with low algal shore input.

INTEGRATED PEST MANAGEMENT IN TENNESSEE SCHOOLS

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Pest management programs in schools need to balance the risk of unnecessary exposure to pest control products with the health risk associated with the pests. Integrated pest management (IPM) can help accomplish this goal. Control strategies in an IPM program extend beyond the application of pesticides to include structural and procedural modifications that reduce the pest's access to food, water, and harborage.

An IPM in Schools Program was initiated in the spring of 1996 as a joint venture between The University of Tennessee and The Tennessee Department of Agriculture, Division of Regulatory Services. Our IPM program has been promoted to school superintendents, pest control professionals, school plant managers, vocational agricultural teachers, technicians attending pesticide applicator training programs, adult agricultural extension agents, Master Gardeners, and graduate students. A manual, PB1603, Suggested Guidelines for Managing Pests in Tennessee's Schools: Adopting Integrated Pest Management (IPM), was developed at The University of Tennessee and mailed to all primary and secondary schools (public and private) in the state.

In 1997, results from a mail survey indicated 11.7% of the public school systems were using IPM. Phone calls made in 1999 to those large school systems (greater than 10,000 students) that did not use IPM in 1997 revealed three additional school systems trying IPM. Our latest estimates raise the percentage of school children in schools using IPM to 38%. We can assume a reduced risk of pesticide exposure to these children.

ARMY ENTOMOLOGY: A CAREER OPPORTUNITY

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ABSTRACT NOT SUBMITTED

ERADICATION OF A SCARAB BEETLE FROM THE MIDWAY ISLANDS

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Midway is a 25 million year old atoll in the northwestern Hawaiian Islands, which consists of three small islands enclosed in a protective reef. With the closure of Midway's Naval Air Facility, the atoll was transferred to the U.S. Fish and Wildlife Service, which was charged with restoring its biological diversity, conserving its historic and natural resources, and providing opportunities for compatible public education and enjoyment of the refuge. In anticipation of the management challenges and potential public use opportunities on this remote atoll and wildlife refuge, the Fish and Wildlife Service entered into a cooperative agreement with Midway Phoenix Corporation. This private company operates the infrastructure and provides a visitor program.

Protaetia pryeri (Janson) (Coleoptera: Scarabaeidae: Cetoniidae), also called the emerald beetle, is a large, metallic beetle native to the Ryuku Islands and Japan. It has probably been on Midway long before the first record of its presence in 1972. Presently, it is not known to exist on any other Hawaiian Island or the U.S. mainland. On Midway these beetles feed voraciously on several garden plants (corn, okra, tomato, and grapefruit flowers) as well as hibiscus and papaya. The adults emerge primarily through the summer months, feeding, mating, and laying eggs in areas of high organic soil. The population of *P. pryeri* has increased greatly over the last several years on Midway and has become a major pest and nuisance. In addition to the damage caused by adult feeding, it is the number one complaint from visitors during the summer months because the beetles appear to be attracted to sweet scents and will land on people. An even greater concern about this pest is that it could potentially be spread to the other Hawaiian Islands. This regulatory issue is a serious concern because if *P. pryeri* became established in Hawaii, it would threaten many of the crops grown in Hawaii as well as create a nuisance to residents and tourists.

A collaborative project was established in 1999 in order to gather more information about the beetle on Midway and to propose and evaluate treatment options to minimize or eradicate *P. pryeri* populations. There were three major areas of focus. First, a series of soil samples were collected to determine where and when the immature stages occur. Second, a soil insecticide, halofenozide (Mach2), was evaluated under an experimental use permit. Halofenozide is considered a low-impact insecticide because of the low use rates and low mammalian toxicity and is less disruptive to the environment and non-target organisms. Third, numerous attractants and chemical lures were tested for their attractiveness to adult beetles. Trapping parameters were also evaluated using the compound most attractive to the adults.

Larvae were found during all months sampled from June 1999 through March 2000. Although a few larvae are found in most habitats of the island, the highest numbers were found beneath the ironwood trees, *Casuarina equisetifolia*. More larvae were found underneath the canopy of the ironwood trees versus outside the canopy and more larvae were found beneath live versus dead ironwood trees. Mach2 provided excellent control of the larvae of *P. pryeri*. The range of control for the 2.2 oz rate, which is the recommended rate, was 94 to 100 percent and the range of control for the 4.4 oz rate was 98 to 100%.

None of the cetoniid lures were very attractive to *P. pryeri*; however, several were attractive to the carpenter bee, *Xylocopa sonorina*, the primary pollinator on the island. Similar results were achieved with the perfumes and deodorants with the exception of cherry. The most attractive compound was L-isoleucine methyl ester (LIME). As little as 1 mg of LIME captured both male and female beetles and 20 mg was attractive for at least one week. Traps placed 22 inches above ground captured three times the number of beetles as did traps at 44 inches, which is the standard height for Japanese beetle traps. Peak captures of beetles occurred at the end of July with a rapid drop off in August. Traps placed around a garden prevented damage to the crops grown in the garden.

REMOTE SENSING OF COTTON ARTHROPODS AND THEIR WILD HOST PLANTS IN THE MISSISSIPPI DELTA

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Pest management in the field is almost entirely dependent upon labor-intensive systems for monitoring pest damage, crop developmental stage, and pest infestations, as well as their wild host plant reservoirs. Visual symptoms of crop damage are often observed too late for making pest management decisions or are difficult to scout in larger areas. In addition, detection of early-season wild host plants of key crop pests could be used to target area-wide vegetation management. Remote sensing and precision agriculture techniques may provide an effective means of early detection of pest infestation and pest damage, in addition to helping direct pest monitoring efforts and precisely target variable rate insecticide and herbicide applications. In July of 1999 we began an 18-month study with two main objectives:

1. Evaluation of remote sensing capabilities for identifying factors in cotton crop growth and development that can be correlated to pest populations.
2. Evaluation of remote sensing capabilities for tarnished plant bug (TPB) wild host plant location and identification, measurement of wild host emergence and growth sequences, and measurement of area covered by wild host plants.

Late-season cotton pest damage study

Spider mite infestations in cotton fields were recorded from sprayed and unsprayed plots at two locations in August of 1999. Spider mite numbers increased in hot dry August weather and were higher in unsprayed fields (where more damage was detected) than in sprayed fields. Spider mite numbers in red "hot spots" were >3x those on healthy cotton and >2x those on stressed cotton. Mite "hot spots" were discernable from healthy and stressed cotton in remotely sensed imagery and spectro-radiometry. Remote sensing may provide early detection of spider mite infestations for the targeting of spot treatments (before economic damage occurs).

Tarnished plant bug (TPB) late season wild host plant study

Late-season wild host plants of TPB were sampled for plant density, percent cover, and TPB density at two locations from August through October in 1999. TPB adults & nymphs were collected from several broadleaf plants (mares-tail, goldenrod, giant ragweed, Pennsylvania smartweed, red-root pigweed, and aster species). TPB was not collected from non-host grasses (Johnson grass, broomsedge, & bermuda grass). Goldenrod, giant ragweed, aster, smartweed, & Johnson grass had greatest % cover. Broadleaf hosts were discernable from grasses in preliminary imagery & spectro-radiometry. Remote sensing may provide detection of early-season wild host plants of TPB as well.

THRIPS SPECIES ASSOCIATED WITH EARLY-SEASON COTTON PRODUCTION IN WEST TENNESSEE

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Thrips (Thysanoptera:Thripidae) were collected from untreated seedling cotton in the early growing season in 1998 and 1999 at the Milan and West Tennessee Experiment Stations. This study is part of a regional project supported by Cotton Incorporated and the respective state support committees in Alabama, Arkansas, Georgia, Louisiana, Mississippi and Tennessee. Adult and immature thrips were collected approximately five times at each location each year by placing eight seedling plants into pint jars containing ethyl alcohol. Five jars were used on each date. These were returned to the laboratory where thrips were extracted from the alcohol. These were stored in 20-ml scintillation vials until the adults were mounted on microscope slides in CMC-10 mounting media.

In 1998, 138 thrips were mounted for species determination. Of these, the proportions of *Frankliniella fusca*, *Neohydatothrips variabilis* and *F. tritici* were 92.0, 5.8 and 2.2%, respectively. In 1999, preliminary results, from the Jackson location only, indicate that the proportions are 72.7, 13.6 and 13.6%, respectively. The absence of *F. occidentalis*, the western flower thrips, on seedling cotton in West Tennessee allows cotton producers to use cheaper and more effective means of early-season thrips management.

KINETICS OF THE ANTIBACTERIAL RESPONSE OF *HELIOTHIS VIRESCENS* LARVAE

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Lepidopteran insects produce antibacterial proteins and peptides (like the Cecropins) in their hemolymph in response to bacterial infections. In this study we wanted to determine the kinetics of the antivacterial response of *Heliothis virescens* (tobacco budworm) 5th instar larvae over a period of 120 hr following vaccination with one million live *Enterobacter cloacae* bacteria. Bactericidal activity was first detected at 2 hr. The greatest peak of bactericidal activity (average of 70%) occurred during period of 12-20 hr. Very little bactericidal activity was found beginning at 60 hr, and no bactericidal activity was detected at 96 hr. Twice-vaccinated larvae did not indicate that a memory or anamnestic antibacterial response was elicited. Cecropins mainly produced the bactericidal activity in the antibacterial immune response. The kinetics of the antibacterial defensive response in *Heliothis virescens* larvae has not been previously determined.

RAPID BIOASSESSMENT OF STREAM MACROINVERTEBRATE ASSEMBLAGES USING FOUR DIFFERENT SAMPLING PROTOCOLS

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We conducted a Rapid Bioassessment of seven streams in the West Sandy Creek Watershed based on their macroinvertebrate assemblages using a modified US Environmental Protection Agency (EPA) Rapid Bioassessment Protocol III (RBP). Macroinvertebrates were collected with kick nets from submerged root mass habitats from all streams on all dates. Riffle, aquatic macrophyte, and snag/course particulate organic matter (CPOM) habitats also were sampled on all dates in those streams where these habitats occurred. We compared bioassessments obtained from four sampling regimes: (1) three semiquantitative root mass samples consisting of 100+ organism subsamples (100 picks), (2) the three 100 pick subsamples combined into a pooled sample (pooled samples), (3) the mean of the three 100 pick subsamples (sample means), and (4) the pooled samples combined with qualitative multiple habitat samples (multi-habitat samples). Bioassessments varied among 100 picks 72% of the time, and varied by two Biological Classification Categories (BCC) 4.6% of the time. Bioassessments based on 100 picks disagreed with those from pooled samples 58% of the time, but never by more than one BCC. Bioassessments based on pooled samples disagreed with those for sample means

25% of the time, but never by more than one BCC. Bioassessments based on pooled samples differed from those obtained using multi-habitat samples 31% of the time, but never by more than one BCC. The disagreement among bioassessments based on 100 picks indicates that streams in this study area require more than a single 100 organism subsample for reliable bioassessments using EPA's RBP III. The discrepancy in the bioassessments obtained using the pooled samples compared to multi-habitat samples is problematical, in part, because it is difficult to ascertain which of the two methods provided the most accurate assessment.

THE MOSQUITOES OF A NORTHEAST MISSISSIPPI SWAMP

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The mosquitoes inhabiting a large shaded swamp in Tishomingo County, MS, were sampled over a three-year period to determine species composition and arbovirus presence. The swamp is near Bear Creek (34:49:41N; 89:33:52W), a large watershed of the Tennessee River, and is approximately 25 hectares in area. The predominant trees are water tupelo (*Nyssa aquatica* L.) and baldcypress (*Taxodium distichum* L.). A light trap (CDC miniature type) baited with CO₂ in the form of dry ice was set at the edge of the swamp once a week from May through September, 1997 - 1999. This work was part of TVA's disease monitoring effort in the lower Tennessee River valley. Mosquitoes were identified to species, and suspected vectors were sent to the University of Alabama at Birmingham for viral detection by RT-PCR.

Eighteen species were represented in the 20,000 female mosquitoes collected. The four most abundant species were of the permanent pool type: *Culex erraticus* (42.7 %), *Anopheles crucians* (19.5 %), *An. quadrimaculatus* (17.6 %), and *Coquillettidia perturbans* (11.4 %). *Uranotaenia sapphirina*, which feeds only on frogs, was the fifth most abundant species in the collections. The two *Anopheles* species were more abundant in late spring and early summer than later in the season, while *Cx. erraticus* increased in abundance as the season progressed and peaked in early fall. Floodwater species made up <1 % of the total catch. Eastern equine encephalitis (EEE) virus was detected in a sample of *Cq. perturbans* in August 1998, and St. Louis encephalitis (SLE) virus was detected in a sample of *Cx. erraticus* in August 1998 and *Cq. perturbans* in July 1999. *Culiseta melanura*, the enzootic vector of EEE, occurs in this swamp but samples indicated that the population was very low.

LaCROSSE ENCEPHALITIS IN EASTERN TENNESSEE, 1999

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LaCrosse encephalitis (LAC) virus, a California serogroup Bunya virus, is the leading cause of pediatric arboviral encephalitis in the United States and an emerging disease in Tennessee, West Virginia, and North Carolina. Human cases of LAC encephalitis in Tennessee and North Carolina have increased above endemic levels during the years of 1997-1999 and may represent an expansion of a new southern endemic focus in Tennessee. This report describes the isolation of LAC virus from the exotic mosquito, *Aedes albopictus*. This mosquito was originally discovered in Houston, Texas, in 1985 and has since been found in 30 states. In Tennessee, the virus was isolated from a pool of 14 adult female specimens reared from eggs collected at a 1998 LAC encephalitis human case site. These findings indicate vertical transmission of the virus in this species. This discovery of LAC virus in wild populations of *Aedes albopictus* coupled with its expanding distribution in the southeastern United States raises the possibility that this mosquito may become an important accessory vector, potentially increasing the number of human cases in endemic foci or expanding the range of the disease.

BIOCONTROL OF FIRE ANTS IN TENNESSEE: AN UPDATE

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²Nursery Crop Research Station, Tennessee State University

Fire ant densities in the United States are much higher than those in South America, the homeland of the red (*Solenopsis invicta*) and black imported fire ants (*S. richteri*). Escape from natural enemies left behind in South America has been speculated to be the cause for the difference in fire ant densities. Therefore, the importation of fire ant natural enemies into the US is likely to reduce the pest population. Two natural enemies have been introduced into different locations in Tennessee. The first one, a Phorid fly commonly known as the decapitating fly (*Pseudacteon tricuspis*), was introduced into two pastures in Bradley Co. The other natural enemy, the protozoan *Thelohania solenopsae*, was introduced in three sites at the Ames Plantation Experiment Station in West Tennessee (Fayette and Hardman Co.), a pasture in Franklin Co., and a pasture in Hamilton Co.

Pseudacteon phorid flies are highly specific in their host preferences. The species introduced in Tennessee attacks only imported fire ants, representing no threat to native ants and other organisms. Approximately 3,000 flies were released in mid August to establish these flies in the field. Severed fire ant heads containing pupae of the phorid flies were received from Florida. This material was sprinkled on top of moist plaster pads, and incubated at 27°C. Emerged flies were collected daily for 10 days, between 10:30 and 11:00 A.M., and transported to the field in clear plastic boxes. In the field, fly cages were opened near disturbed fire ant mounds so ants were present at the soil surface. To keep the flies active on and around fire ant mounds (usually for 1:30 to 2h after fly release), ants were periodically disturbed so that they would stay on the soil surface exposed to fly oviposition. If left undisturbed, fire ant workers will cease any activity and hide from fly attacks.

During releases, flies were observed exhibiting typical oviposition behavior. Male flies mate with females when the female flies are attacking ants. The females will then fly to an ant worker and attempt to oviposit. Oviposition happens in less than one second, with flies inserting their ovipositor in the ant host and flying away. Ants will react to the presence of the flies by curving their body to escape fly attack.

After a 5-week fly developmental period, the fly release areas were checked weekly for adults of the decapitating flies. Fire ant mounds were disturbed and observed for any signs of adult phorid flies hovering above the ants, as is typical of the *Pseudacteon* spp. During a 4-week monitoring period, only one fly was observed with characteristics of the released flies. Due to the lack of clear signs of fly establishment, it seems that initial introduction attempts were not successful.

The protozoan pathogen, *Thelohania solenopsae*, was introduced during May 1999 into fire ants nests at three sites at the Ames Plantation Experiment Station in western Tennessee. One site was a fallow field where *T. solenopsae* was released unsuccessfully during 1998. New inoculation sites also included a managed pasture and a sycamore plantation. Control plots were also established at similar locations. Also, in Franklin and Hamilton Counties, treatment and control sites were established in pastures. All fire ant colonies in the study areas were mapped to document the spatial distribution and/or spread of ant and protozoan populations. The study sites were surveyed, fire ant colonies flagged, and fire ant populations estimated using a visual rating scale (USDA population index method). Ant species composition, spatial distribution and relative population sizes were estimated. Pitfall traps were placed into the soil to collect ants and other crawling insects, and ant bait stations were placed in a grid pattern over the plots. To inoculate fire ant colonies with *T. solenopsae*, five grams of infected fire ant brood were added to each of five colonies in the treatment areas. Control colonies did not receive brood.

Individual worker ants and brood from all colonies were examined for *T. solenopsae* before introduction of infected fire ant brood and at 2-month intervals thereafter. As with the phorid fly, no signs of *T. solenopsae* infection were observed in the samples taken after two and four months. A severe drought observed in TN during the summer of 1999 may have had

significant negative impact on the survival of the protozoan inoculum, and the fly eggs, larvae, and pupae. Observations on all sites where fire ant natural enemies were introduced will be repeated in Spring 2000, and new releases will be made. Successful establishments of *P. tricuspis*, *T. solenopsae* and other fire ant natural enemies are not expected to eradicate imported fire ants, but it should help tilt the ecological balance in favor of native ants. This may lead to a long term decrease in imported fire ant population, with consequent decrease in the problems caused by this pest.

THE PERPLEXING ASIAN AMBROSIA BEETLE, *XYLOSANDRUS CRASSIUSCULUS* (MOTCHULSKY): PROGRESS MADE BUT QUESTIONS REMAIN

Frank A. Hale

Agricultural Extension Service

The University of Tennessee, Knoxville, TN 37901-1017

The Asian ambrosia beetle (AAB) was first recognized as a pest of trees in Tennessee landscapes in 1992. Since then it has become an occasional pest in Tennessee nurseries. The AAB is able to attack apparently healthy trees, shrubs and vines of a wide host range (Atkison et al., 1988; Davis and Dute, 1995). The AAB larvae feed on the ambrosial fungi that the adults introduce into the galleries. The wilting and death that occurs in many of the plants attacked is not thought to be caused by gallery formation or the ambrosial fungi. The AAB is speculated to be a vector of wilt fungi (Davis and Dute, 1997).

Signs of AAB attack include toothpick diameter tubes of sawdust-like frass sticking out from the many small holes in the trunk or infested limbs, wilting and oozing sap. Ethyl alcohol baited traps (Kovach traps, Theysohn windowpane traps) have been used to monitor adult AAB activity (Hudson and Mizell, 1999). The flight of the adult female AAB determined by trap catches occurs in late winter during warm spells while the trees are still dormant. Growers should inspect plants for any signs of damage when trap catches indicate AAB activity. If a particular block of trees are being attacked, pyrethroid insecticide sprays such as permethrin (Astro, Ambush, Pounce) should be initiated (Hudson and Mizell, 1999) at 10-14 day intervals and discontinued only after the plants have leafed out. The trees in containers showing signs of attack should be moved to the edge of the block to serve as a trap crop to try to limit the infestation to as few of the plants as possible (Hudson and Mizell, 1999).

STATUS OF BEEKEEPING PESTS AND PEST MANAGEMENT OPTIONS

John Skinner, J. Patrick Parkman, and Mike D. Studer
Department of Entomology and Plant Pathology
The University of Tennessee, Knoxville, TN 37901

The parasitic mites *Varroa destructor* (formerly *V. jacobsoni*) and *Acarapis woodi*, the tracheal mite, remain the most serious pests of the honey bee, *Apis mellifera*, in North America and most of the world. Fortunately, treatment options for these pests are expanding. Recently, a coumaphos-impregnated strip (Checkmite+®) for *Varroa* control and formic acid gel (Apicure®) for tracheal mite and *Varroa* control have been registered for use in the USA. We evaluated these and other treatments for their efficacy in honey bee colonies in east Tennessee.

In fall 1998, formic acid gel (provided by the USDA) and three other treatments were tested: 1) Apilife VAR, a European product consisting of botanical oils absorbed into foam blocks; 2) plant extract oil strip, a cardboard strip impregnated with vegetable oil and plant extracts; and 3) Apistan®, a pyrethroid-impregnated strip and the standard control for *Varroa*. Treatments were kept on colonies for 42 d. Formic gel and Apilife were replaced at 21 d, oil strips were replaced every 7 d. Ten colonies were used per treatment. *Varroa* drop was monitored with sticky-board traps placed on hive bottom boards. Thirty bees were collected from each colony before and after treatment to determine tracheal mite infestation. Formic acid vapors were measured three times per week in six of the hives within each treatment group with a drager® gas detector pump. Bee, brood and stored honey/pollen abundance were recorded before and after treatment.

In spring 1999, Apilife VAR, Checkmite+, Apitol (a systemic acaricide fed to bees in sugar syrup), and 200 g of formic acid gel (58% formic acid) held in Ziploc bags, were applied. Treatments were kept on colonies for 42 days; Apilife and formic gel bags were replaced at 21 days. Ten colonies were used per treatment. *Varroa* abundance, tracheal mite infestation, bee, brood and honey/pollen abundance, and formic acid vapor concentrations were monitored as before.

In fall 1998, post-treatment counts revealed *Varroa* survival was least in Apistan- and formic-gel-treated colonies. Survival was greatest in untreated and oil-strip-treated colonies. Tracheal mite infestation was reduced 100, 97 and 93% in formic-gel-, oil-strip- and Apilife-treated colonies, respectively. Formic acid vapors dropped to ca. 10 ppm in 10 d, but remained at higher levels after the second application at 21 d. Treatments did not appear to affect bee, brood and pollen abundance. There was significantly less honey in formic-gel and oil-strip-treated colonies after treatment.

After the spring treatment, *Varroa* survival was least in Checkmite+- and Apilife-treated colonies. Survival was greatest in untreated and formic-gel-treated colonies. Apilife provided 60% control of tracheal mites. Significantly fewer bees and brood were found in formic-gel and

Apilife-treated colonies, treatments which produce irritating vapors which may effect brood production. Formic gel desiccated rapidly; vapors dropped to below 10 ppm at approximately 10 days after application. Apitol (applied during the nectar flow and not adequately consumed) and formic-gel bags (improper formulation and packaging) were not sufficiently and fairly evaluated in comparison to the other treatments.

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the Board of Directors Meeting
August 9, 1999

President Clete Youmans convened the meeting at 11:20 a.m. at Belmont University. Minutes of the post meeting board meeting October 16 were read by Secretary Lentz and approved as read.

Updating the TES Display Poster/Banner for use at meetings was discussed. Youmans will get with Grant and Latson to determine the best approach (incorporation of photos, etc.). Different concepts were discussed, whether it should be displayed on an easel, hung on the wall behind registration or hung from the front of a table.

A Treasurer's report was distributed. The income (\$1135.42) and disbursements (\$1155.59) from the past meeting were noted. The amount currently on hand is \$2112.83 with an additional \$2800 in a CD. Youmans asked if the honorarium to Doris Caldwell was a continuing item. The corporate dues and individual registrations were discussed. Hamilton moved (Pereira seconded) that the report be accepted. The motion passed.

Mannion did not have any comments about the program yet. Mannion did ask about the status of the Firefly. The awarding of the honorarium to Doris Caldwell was discussed. Previous minutes indicated that the honorarium be considered on an annual basis. Hamilton moved (Hale seconded) that Doris Caldwell be paid \$200 for assembling the Firefly. The motion passed.

Mannion asked about the printing of the program. Youmans suggested that she get with Grant to check on the program. The program is not mailed prior to the meeting, but is placed on the web site. Mannion did indicate that she will be out of the country September 23 - October 9. The paper deadline was set at September 17, 1999. She will prepare a cover letter for the call for papers that mentions the speaker and hotel arrangements. The guest speaker topic of transgenic crops was discussed. Lentz will make the contact with Walt Mullins about speaking at TES. Mannion asked about registration time and the fees (registration is \$20 and dues \$5).

Hale presented information on local hotel/motels which are located on West End Ave. He discussed the pros and cons of the Holiday Inn Vanderbilt, Hampton Inn Vanderbilt and the Days Inn. Days Inn has a continental breakfast and a rate of \$55. The dinner that TES has on Thursday evening was discussed. Hale asked for a restaurant/cafeteria list for the area. Murphree asked if the group would be interested in a catered dinner at Belmont.

Hamilton presented the Awards Committee report. Criteria for the Richard Caron Outstanding Entomologist Award and the date of submission were discussed. The nomination must be submitted in time for the nominee to be considered by the Board at the summer meeting. These items will be included in the cover letter that goes with the call for papers. The Howard Bruer nominee submitted by John Skinner is James Johnson from Shelby Co. He is the junior

4H winner in entomology. Questions were raised as to his grade level since the award calls for a high school winner. Lentz volunteered to check with the District Office and determine his eligibility. Hale moved (Lentz seconded) that if James Johnson is a 9-12 grader that he be awarded the Howard Bruer Award. (Lentz confirmed later that he was in high school). The motion passed.

Hamilton also raised questions concerning the R. E. Caron Outstanding Entomologist Award. A nomination was submitted last year, but did not make the August 1 deadline for submission. The letter of nomination mentioned only the individual's career work to support the nomination. The Board felt that there needs to be more credentials submitted with the nomination form. Youmans volunteered to bring this up at the next board meeting.

Powell (reporting for Editor Haun) indicated that the corporate sponsors need to be listed in the Firefly. Powell also indicated that a number of abstracts from the speakers were missing. Some speakers maintained that they had submitted their abstracts. Speakers would be contacted to obtain the abstracts so that they can be included in the Firefly. Mannion moved (Murphree seconded) that the meeting be adjourned. The motion passed.

Gary L. Lentz
Secretary
Tennessee Entomological Society

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the Board of Directors Meeting
October 21, 1999

The pre meeting board meeting was called to order by President Youmans at 10:00 a.m. in the conference room at Belmont University. The minutes of the previous meeting were read. Hamilton moved (Murphree seconded) that the minutes be approved as read. The motion passed.

The Treasurer's report was presented by Steve Powell. A copy of the report is to be included in the Firefly. Lentz moved (Pereira seconded) that the report be accepted as presented.

Editor Haun presented his report. He indicated that Ms. Caldwell was happy to work on the Firefly. A memorial to John Hammett, retired TDA director, was included in this issue of the Firefly.

Program Chairperson Mannion highlighted the upcoming program. The keynote speaker is scheduled for 1:15 p.m. There are to be eight student papers to be presented until 4:00 p.m. Then there will be a general session for the remainder of the afternoon. The welcome will be given at 1:05 by Dr. George Simms, Provost of Belmont University. The General Business meeting will convene at 8:00 a.m. in the morning with committee reports, old business and new business.

Local arrangements were discussed. TES members will gather at the Logan's Restaurant at 6:00 p.m. There is a room to accommodate 35 people. The Days Inn is to provide a room for the group mixer tonight.

Publicity was reported by Steve Murphree. He asked for input on the banner or poster. Several items are needed to complete the poster.

The Nominating Committee report was presented. The slate of officers to be presented to the membership included President-Elect: Gray Haun, Members-at-Large: Lee Greer and Jim Keener, Secretary: Gary Lentz. The Editor nominee, Lynn Snodderly, was reluctant to take the position but would consider it for the three-year period.

Awards Chairperson Hamilton indicated the Richard Caron Outstanding Entomologist nominations should be submitted this fall. The award/scholarship that C. Russ Patrick wanted to establish was discussed briefly. The board felt that there should be some endowment from which the scholarship could draw. The regional science fairs could use the support of Tennessee entomologists in the entomological activities of fair entrants.

Prediction/Evaluation Chairperson Seward indicated that two reports have been submitted. These are included in the Firefly.

Grant presented the Membership Committee report. He indicated the need to update the membership list. He also presented information concerning the web site where some TES activities are shown. Maintaining a web site strictly for TES would require additional expenses and time.

The Publication/Editorial Chair reported that 90 copies of the Firefly were printed at a cost of about \$4 each. There was discussion of putting the Firefly on the web. The cost might be about \$50/month. The current issue is ten pages longer due to the increased prediction/evaluation reports. The editor did indicate that getting abstracts submitted does continue to be a problem. Discussion followed concerning the length of papers, submission of abstracts, and allowed time for submission of abstracts.

Committee assignments and selection of Chairs were discussed.

New business presented included a discussion of the ESA meeting in Atlanta this coming December. TES could put its banner up at the meeting.

Hamilton moved (Grant seconded) that the meeting be adjourned. The motion passed at 11:42 a.m.

Gary L. Lentz
Secretary
Tennessee Entomological Society

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the Annual Meeting
October 22, 1999

The annual business meeting of the Tennessee Entomological Society was convened by President Youmans at 8:10 a.m. at Belmont University in Nashville. President Youmans called for the reading of the minutes of the previous meeting. Secretary Lentz moved (Hamilton seconded) that the minutes be approved as published in the Firefly. The motion passed.

Treasurer Powell distributed copies of the financial report and discussed highlight of the TES finances. The previous balance was \$4933 and the current balance is \$4924.49. He discussed the CD and its accumulation.

Auditing Committee Chair Lentz reported that the books were examined by the committee (Hale and Haun) and all was found in order.

Awards Committee Chair Hamilton reported that the committee is looking to present awards at the regional science fairs. He also outlined criteria to support nominations for the Richard Caron Award. James Johnson of Shelby County was awarded the Howard Bruer Award for outstanding contributions in 4-H entomology. The outstanding student paper winner was Andrew Beld of Vanderbilt. The judges for the competition were Hamilton, Gerhardt, Mannion, Davenport and Hale.

Program Committee Chair Mannion complimented the committee. There was one invited paper, 8 student papers and 13 additional papers.

There was no report from the Constitution/Operating Procedures Committee.

Local Arrangements Chair Hale thanked Steve Murphree for making Belmont University facilities available. Hale stressed the need for all members to stay at the designated hotel so we can get together and also get the complimentary room.

Editor Haun thanked all for their work in getting the Firefly together. He did stress the need for individuals to make contributions for the prediction/evaluation section since this is a good record of insect distribution.

Publicity Committee chair Latson presented several activities from his committee. Although the news media was invited, no reporters attended the meeting. He found that the governor did not declare a "week" for a group which meets only one time per year, but would make a proclamation if a letter from the group was submitted to his office. Latson also discussed the need for a display board or banner. Some of the items are available, but new materials need to be prepared. Lentz volunteered that the TES logo was in the TES Secretary's files and would

be located. Latson also discussed the preparation of a reusable display booth which could be used at TES, TAS, and ESA meetings. The booth would contain brochures of TES activities.

Membership Committee Chair Grant acknowledged the work of the committee composed of Drew Beld, Steve Murphree, Steve Hamilton and Reid Gerhardt. The committee plans to do some aesthetic things to the web site. Grant thanked American Cyanamid for providing the student meals, Hale for providing the hospitality and Latson and Murphree for their recruitment efforts.

Mannion moved (Vail seconded) that the committee reports be approved. The motion passed.

Nominating Committee Chair Burgess presented a slate of officers from the committee. They were as follows: President-Elect - Gray Haun, Secretary - Gary Lentz, Members-at-Large - Lee Greer and Jim Keener. The slate was elected by acclamation. Lynn Snodderly was nominated for the position of Editor to replace Gray Haun. He was elected.

Past-Presidents of the Tennessee Entomological Society escorted President-Elect Mannion to the podium. President Youmans presented her with the TES gavel. President Mannion did not have a presidential plaque to present to Past-President Youmans!

Gerhardt moved (Grant seconded) that the meeting be adjourned. The motion passed.

Gary L. Lentz
Secretary
Tennessee Entomological Society

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the Board of Directors
October 22, 1999

The post meeting board meeting were convened by President Mannion who welcomed the new board members. Mannion called for the Treasurer's report. Powell reported that 44 people registered and total receipts was \$733 including some contributions. There were early registrations of \$50. There were no meeting room costs. Coffee from Belmont was \$31. Dr. Mullins, the keynote speaker, paid all his expenses as a contribution to TES. The student award was \$50 and the cost of the Firefly was \$358. Refreshments cost \$117.55.

Committee chairs were selected for each of the committees. Chairpersons are as follows:

Auditing - Hale
Awards - Hamilton
Constitution - Burgess
Membership - Grant
Nominating - Eisler
Prediction/Evaluation - Seward
Program - Haun
Publication/Editorial - Snodderly
Publicity - Murphree
Local Arrangements - Seward

The meeting location was discussed. The group discussed the merits of Jackson (facilities, nearness to Arkansas and Missouri, industry representatives in the area). Haun moved (Youmans seconded) that the Tennessee Entomological Society meet at the West Tennessee Experiment Station in Jackson. The motion passed.

The Operating Procedures were discussed and the board felt the need for revisions to be made and these incorporated into the next issue of the Firefly.

The date of the summer board meeting was set for August 10, 2000 at 10:00 am at the UT Extension offices in Nashville.

Haun asked if most of the membership had e-mail addresses. He indicated he would contact the new editor Snodderly and get the abstracts in promptly.

President Mannion indicated that she had sent a letter of appreciation and a \$200 check to Doris Caldwell for her work on the Firefly.

Youmans suggested that the program next year have a strong component of ag related papers to encourage participation by the many industry people in the West Tennessee area. It was pointed out that the student paper competition filled most of the first session of the meeting.

Hale moved and Hamilton seconded the motion to adjourn the meeting. The motion passed. The meeting was adjourned at 1:05 pm by President Mammion.

Respectfully,

Gary L. Lentz
Secretary TES

TENNESSEE ENTOMOLOGICAL SOCIETY

Treasurer's Report October 1998 - October 1999

Books and Records audited 10-16-98 by Auditing Committee (Frank Hale, Chair)

Balance on hand 10-15-98

Checking	\$2,307.00
Money Market	\$2,500.00
Cash	\$ 126.00
TOTAL	\$4,933.00

Number of pins on hand 10-15-98 - 8 -

DISBURSEMENTS

Gary Moughler - Student Award	(\$ 50.00)
Reid Gerhardt - Plaques	(\$ 68.20)
Clete Youmans - Room for guest speaker (Dr. Appel)	(\$ 39.89)
Dr. Jerome Grant - Firefly Publication	(\$365.89)
Dr. Jerome Grant - Food and Refreshments	(\$138.35)
Dr. Arthur Appel - Travel Expenses	(\$240.86)
Doris Caldwell - Honorarium	(\$200.00)
Checking Account Fees	(\$ 44.00)
Money Market Account Fees	(\$ 20.40)
Dr. Steve Murphree - Meeting Expenses	(\$ 31.83)
TOTAL EXPENSES	(\$1,199.42)

INCOME

28 Registrations	\$560.00
26 Regular Dues	\$130.00
1 Corporate Due	\$ 25.00
12 Student Dues	\$ 12.00
1 - 1999 Meeting Early Regis., Dues, Corp. Dues	\$ 50.00
Corporate Donations	\$325.00
Cash Donation	\$ 50.00
Checking Account Interest	\$ 29.45
Money Market Interest	\$ 9.46
TOTAL INCOME	\$1,190.91

BALANCE ON HAND 10-21-99

Checking Account	\$1,904.49
Certificate of Deposit	\$2,800.00
Cash	\$220.00
TOTAL ASSETS	\$4,924.49

NOTE: CD#5328641582, issued 3/12/99, will mature on 3/11/01. The current value is 2,860.02. The interest rate is 4.23%. Interest payments are made quarterly.

Respectfully Submitted
Steve Powell, Treasurer

**ATTENDANCE ROSTER OF THE 1999 ANNUAL MEETING
OF THE TENNESSEE ENTOMOLOGICAL SOCIETY**

<u>MEMBER</u>	<u>AFFILIATION</u>	<u>LOCATION</u>
<u>Regular Members</u>		
Bancroft, Harold	University of Memphis	Memphis, TN
Biggers, Charges J.	University of Memphis	Memphis, TN
Bilbrey, Cindy	TN Dept. Agri.	Nashville, TN
Bogard, James B.	TN Dept. Agri.	Nashville, TN
Burgess, Gene	UT Ag. Ext. Service	Knoxville, TN
Carder, Mark	U.S. Army	Newman, GA
Dunn, Joe		
Gerhardt, Reid R.	Univ. of TN.	Knoxville, TN
Grant, Jerome F.	Univ. of TN	Knoxville, TN
Hale, Frank	UT Ag. Ext. Service	Nashville, TN
Hamilton, Steven W.	Austin Peay St. Univ.	Clarksville, TN
Haun, Walker G. (Gray)	TN Dept. Agri.	Nashville, TN
Kauffman, Bruce	TN Dept. Agri.	Nashville, TN
Keener, Jim	TN Dept. Agri.	Knoxville, TN
Keeton, Dana M.	Univ. of TN	Knoxville, TN
Latson, Larry N.	David Lipscom Univ.	Nashville, TN
Lentz, Gary L.	Univ. of TN	Jackson, TN
Mannion, Catharine	TSU	McMinnville, TN
McDonnell, Ray	TN Dept. Agri	Knoxville, TN
Murphree, Steven C.	Belmont Univ.	Nashville, TN
Ourth, Donald D.	Univ. of Memphis	Memphis, TN
Parman, J. Patrick	Univ. of TN	Knoxville, TN
Patrick, Russ	Univ. of TN	Jackson, TN
Pereira, Roberto	Univ. of TN	Knoxville, TN
Powell, Steve D.	TN Dept. Agri.	Nashville, TN
Schiller, Joseph R.	Austin Peay St. Univ.	Clarksville, TN
Seward, Ron	UT Ag. Ext. Service	Jackson, TN
Sudbrink, Jr., Donald L.	Miss. St. Univ.	Stoneville, MS
Vail, Karen	Univ. of TN	Knoxville, TN
Watson, Charles	Aquatic Resources Center	Franklin, TN
Wiggins, Greg	Univ. of TN	Knoxville, TN

Student Members

Beld, Andrew	Vanderbilt University	Nashville, TN
Davenport, Ken	Austin Peay University	Woodlawn, TN
Jackson, Kelly	Univ. of TN	Chattanooga, TN
LaForest, John	Univ. of TN	Knoxville, TN
Leckie, Brian	Univ. of TN	Knoxville, TN
McAllister, Chris	Univ. of TN	Knoxville, TN
Moughler, Gary	Univ. of TN	Knoxville, TN
Nelson, John D.	Univ. of TN	Knoxville, TN
Otto, Daniel	Univ. of TN	Knoxville, TN
Ramsey, Amanda		
Schweiger, Alycia E.	Univ. of TN	Knoxville, TN
Stumpf, Christof	Univ. of TN	Knoxville, TN

Sustaining/Corporate Members

Clete Youmans	American Cyanamid	Dyersburg, TN
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BOARD OF DIRECTORS

President - Clete Youmans
Past President - Steve Murphree
President Elect - Catharine Mannion
Secretary - Gary Lentz
Treasurer - Steve Powell
Editor - Gray Haun
Historian - Harry Williams
Member-at-Large - Karen Vail
Member-at-Large - Roberto Pereira

COMMITTEES: 1998 - 1999

AUDITING

Gary Lentz, Chair
Frank A. Hale
Gray Haun

AWARDS

Steve Hamilton, Chair
Gene Burgess
Reid Gerhardt
Catharine Mannion
Bill Shamiyeh
John Skinner

CONSTITUTION/OPERATIONAL PROCEDURES

Gene Burgess, Chair
Joe Dunn

LOCAL ARRANGEMENTS

Frank A. Hale, Chair
Renee Follum
Jerome Grant
Catharine Mannion
Steve Murphree

MEMBERSHIP

Jerome Grant, Chair
Drew Beld
Reid Gerhardt
Steve Hamilton
Steve Murphree

NOMINATING

Bill Shamiyeh, Chair
Gene Burgess
Jim Eisler

PREDICTION/EVALUATION

Ron Seward, Chair
Jimmy Cagle
Jim Eisler
Russ Patrick
Steve Powell
Bill Shamiyeh

PROGRAM

Catharine Mannion, Chair
Reid Gerhardt
Gray Haun
Gary Lentz

PUBLICATION/EDITORIAL

Gray Haun, Chair
Paris Lambdin
Ray McDonnell
Roberto Pereira
Lynn Snodderly

PUBLICITY

Larry Latson, Chair
Steve Murphree

APIARY ANNUAL REPORT - 1999

Ray McDonnell, State Apiarist

The honey flows in Tennessee in 1999 were variable due to weather. There was an early spring build-up of colonies due to warm temperatures that were followed by cooler temperatures. The cooler temperatures kept the bees in the hive and when warmer temperatures returned, many colonies began swarming (especially in West Tennessee). In the spring, there seemed to be good nectar flows from cherry and especially the black locust. The black locust nectar flow was the best many people had seen in years. The tulip poplar honey crop was spotty in different areas reflecting the pattern of rain showers. The clover nectar flow was spotty due to showers and the sourwood nectar flow was negligible due to July rains on the Plateau. A little sourwood honey was made in the eastern mountains. By mid-summer the state was in a severe drought. In West Tennessee, the soybean/cotton honey flow was not as good as expected, due to the dry weather, but in some areas about a ½ crop was produced. The drought caused many colonies that had been robbed for honey to go into starvation conditions. The fall nectar flows from goldenrod, astors and other weeds were delayed because of the continued dry weather and never came to some areas of West Tennessee. Many colonies needing feeding though fall and into the winter.

In East Tennessee, we have found 2 new cases of American Foulbrood in Knox County. No new cases of AFB were found in Middle Tennessee. In West Tennessee, AFB was found in two apiaries belonging to the same beekeeper in Dyer and Lake Counties.

In 1999, evidence of increases in varroa mite populations was found by mid-August in very some colonies. This was unlike last year when much lower populations of the mites were found in colonies in August.

We have had no reports yet of the small hive beetle (SHB) being found in Tennessee. Three possible SHB sightings proved to be other closely related beetles upon microscopic inspection. Tracheal mites were present in some samples that were microscopically examined in the late fall. The winter of 1999-2000 did produce many colony losses attributed to these mites.

During the first weeks in August the Boll Weevil Eradication Program (BWEP; joint USDA and state project) resumed spraying in southern West Tennessee. Two beekeepers reported problems with bees being killed by spraying near colonies. One beekeeper in Fayette County contacted my office and she was given the BWEP office number to call in Somerville. With a follow-up call I found her satisfied with the arrangements made by BWEP to change their spray schedule in her area. The other beekeeper in Tipton County maintains his own contact with the BWEP, Brighton office, and forwards information on his colonies to them.

TENNESSEE STATE APIARISTS REPORT: January 1999 - December 1999

Beekeeping Statistics

	<u>1998</u>	<u>1999</u>	<u>Difference</u>
No. State Registered Beekeepers	719	851	+ 132
No. State Registered Apiaries	1048	1195	+ 147
No. State Registered Colonies	8096	9556	+ 1460
No. Estimated Beekeepers	2000		
No. Estimated Colonies	24000		

Colony Inspections

<u>Inspections</u>	<u># Apiaries</u>	<u># Colonies</u>	<u>Grant Amt. Used</u>
Anderson Co. (Allen, Elwood)	52	370	\$1260
Blount Co. (Tarwater)	23	856	\$1942
Campbell Co. (Broyles)	No Grant	No Grant	-
Davy Crockett Assoc. (S. Ledford)	24	190	\$ 620
Knox Co. (Arnold)	27	174	\$ 618
Memphis Assoc. (Bush)	4	78	\$ 196
Nashville Assoc. (?)	No Grant	No Grant	-
Roane/Morgan Co. (Hendrickson)	No Grant	No Grant	-
Sevier Co. (John Kelley)	18	65	NA
Washington Co. (Ledford, Coggins, Saylor, Allen)	45	257	\$ 964
Wilson Co. (Tom Hart)	7	65	\$ 200
State Apiarist (Ray McDonnell)*	54	644	
TOTAL	254	2699	\$ 5800

* inspections done with association inspectors not included

American Foulbrood Statistics

<u># Apiaries with AFB</u>	<u># Colonies in Apiaries with AFB</u>	<u># Colonies with AFB</u>
6	59	11
Percent Inspected Colonies with AFB	0.40% (1998 = 1.7%)	
Percent Registered Colonies with AFB	0.14% (1998 = 0.6%)	
No. Apiaries Quarantined	6	
No. Apiaries Released from Quarantine	0	
No. Colonies Destroyed	5 (some still pending)	
No. Colonies Treated/Saved	9	
Colonies entering the State (Certified)	189	
Colonies Leaving State (Certified)	5	

AFB was found in 3 counties: Knox, Dyer and Lake. AFB was also found in Loudon County but the inspection was not completed due to robbing among the bees and will be completed and reported in 2000 Annual Report.

Honeybee Colonies Inspected in 1999 Reported by County

1.	ANDERSON	77
2.	BEDFORD	
3.	BENTON	
4.	BLED SOE	80
5.	BLOUNT	14
6.	BRADLEY	
7.	CAMPBELL	14
8.	CANNON	
9.	CARROLL	
10.	CARTER	63
11.	CHEATHAM	7
12.	CHESTER	
13.	CLAIBORNE	
14.	CLAY	
15.	COCKE	6
16.	COFFEE	
17.	CROCKETT	
18.	CUMBERLAND	266
19.	DAVIDSON	20
20.	DECATUR	
21.	DEKALB	
22.	DICKSON	
23.	DYER	153
24.	FAYETTE	24
25.	FENTRESS	60
26.	FRANKLIN	
27.	GIBSON	
28.	GILES	20
29.	GRANGER	124
30.	GREENE	129
31.	GRUNDY	
32.	HAMBLEN	
33.	HAMILTON	
34.	HANCOCK	
35.	HARDEMAN	12
36.	HARDIN	
37.	HAWKINS	4
38.	HAYWOOD	
39.	HENDERSON	
40.	HENRY	5
41.	HICKMAN	
42.	HOUSTON	
43.	HUMPHREYS	
44.	JACKSON	
45.	JEFFERSON	68
46.	JOHNSON	
47.	KNOX	247
48.	LAKE	51

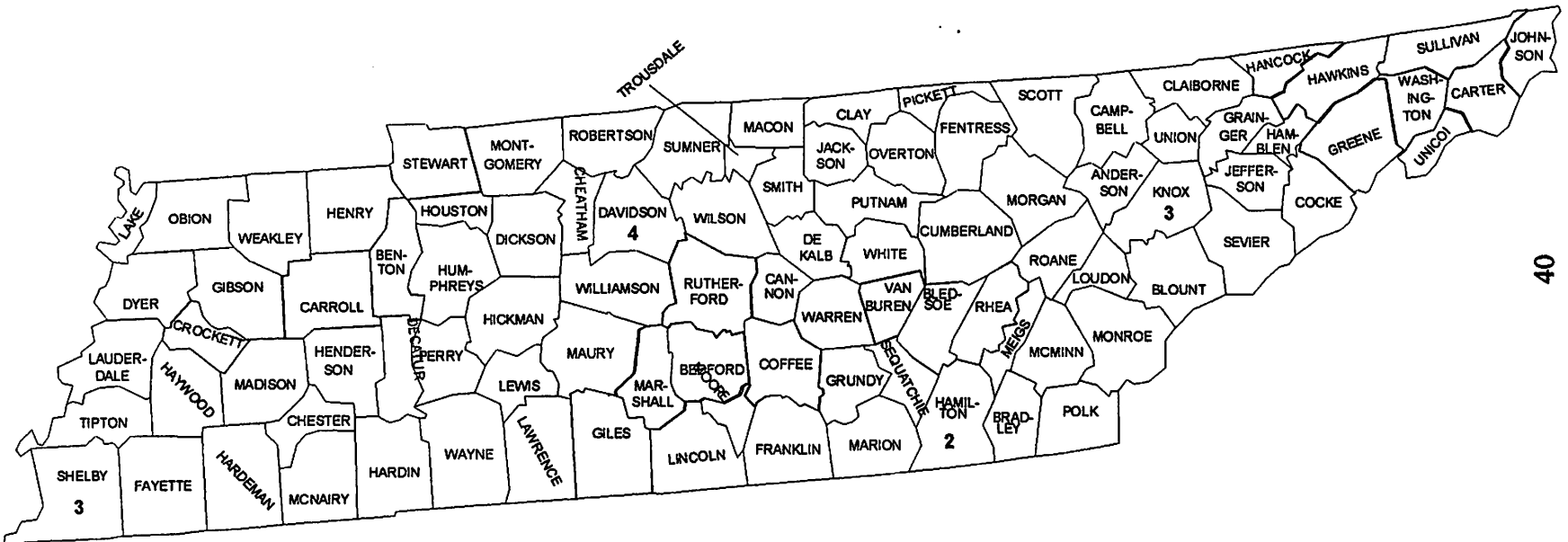
49.	LAUDERDALE	
50.	LAWENCE	
51.	LEWIS	
52.	LINCOLN	179
53.	LOUDON	303
54.	MCMINN	14
55.	MCNAIRY	
56.	MACON	
57.	MADISON	5
58.	MARION	
59.	MARSHALL	
60.	MAURY	
61.	MEIGS	
62.	MONROE	1
63.	MONTGOMERY	131
64.	MOORE	
65.	MORGAN	25
66.	OBION	
67.	OVERTON	
68.	PERRY	
69.	PICKETT	
70.	POLK	
71.	PUTNAM	2
72.	RHEA	
73.	ROANE	55
74.	ROBERTSON	
75.	RUTHERFORD	
76.	SCOTT	
77.	SEOUATCHIE	29
78.	SEVIER	65
79.	SHELBY	54
80.	SMITH	
81.	STEWART	
82.	SULLIVAN	19
83.	SUMNER	41
84.	TIPTON	
85.	TROUSDALE	
86.	UNICOI	123
87.	UNION	17
88.	VAN BUREN	
89.	WARREN	
90.	WASHINGTON	56
91.	WAYNE	
92.	WEAKLY	
93.	WHITE	
94.	WILLIAMSON	
95.	WILSON	65
TOTAL		2699

COOPERATIVE AFRICANIZED HONEY BEE SURVEY

FY 1999

TRAPS OPERATED

TENNESSEE



Cooperators consist of USDA-APHIS, &
Tennessee Department of Agriculture

1999 Forest Insect Highlights

Bruce W. Kauffman

Tennessee Department of Agriculture, Div. of Forestry

Box 40627, Nashville, TN 37204

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White pine weevils damaged scattered trees in the northern half of East Tennessee killing terminals in some young forest plantings and Christmas trees in Claiborne, Cumberland, Morgan, Roane and Sevier Counties. Areas of heavy **loblolly pine sawfly** defoliation decreased in the northern half of the Nashville Basin and southwestern Tennessee (Wilson, Dickson, Sumner, Cheatham, Smith, Rutherford, Robertson, and Davidson Counties).

A dry late summer and fall stressed pines in many locations in west Tennessee and northwestern Highland Rim allowing infestations of **Ips pine beetle** to develop in scattered locations. **Black turpentine beetles** were also at above normal levels. Meanwhile in East Tennessee, **southern pine beetle** (SPB) populations spread to epidemic levels in 15 epidemic in the worst outbreak since 1973-76. Over 3 million dollars of timber was killed in the 2978 spots of SPB in the State (see table).

Nantucket pine tip moths had three generations in northern Middle Tennessee with reduced shoot damage in comparison to the high levels of 1998. Although most **eastern tent caterpillar** defoliation was under 50 % statewide, moderate to heavy defoliation was common with **locust leaf miner** on black locust in the eastern half of the State. **Fall webworm** population levels were generally low across most of the State. **Hackberry butterfly** defoliation was light in the Nashville Basin.

Bagworms lightly defoliated red cedar, spruce, and white pine from Knoxville to Nashville. **Oak, sycamore and basswood lacebugs** were reduced from moderate to high levels in 1998. **Walkingsticks** caused light defoliation on oaks in the northern Cumberland Plateau. Despite drier summer weather there was no increased oak defoliation by the **orange-striped oakworm**, **variable oak leaf caterpillar** or the **yellow-necked caterpillar** in scattered counties in Middle and East Tennessee. The lowest population levels of fall cankerworm ever recorded were present in northeastern Tennessee.

A **jumping oak gall** (*Neuroterus* sp.) infested scattered white and post oaks in all counties where the trees exist except the Cumberland Plateau. From 1 to 20 percent of the white oaks in northwestern middle Tennessee and in the counties surrounding Knoxville were infested. Usually less than 50 percent of the foliage is affected although the problem is worse on the drier, southwestern slopes. Some locations around Knox County had single trees with nearly all the leaves brown.

Grasshoppers damaged 5 to 10% of Virginia pine Christmas trees in Middle Tennessee and were more prevalent in West Tennessee as well. **Seedbugs** and drought killed 211 pounds of loblolly and white pine seed in State nursery orchards. This loss amounted to \$10,550.

Catches of the **gypsy moth** decreased in the State this year (159). Five spray blocks containing 224 moths in Scott County in 1998 and totaling 1941 acres were treated aerially with Btk in May, 1999 reducing the moth count to 11 this year. Two counties (Overton and White) had infestations that were eradicated. Two ground treatments are planned in Sevier (new infestation in 1999) and Cumberland Counties in May, 2000.

Hemlock woolly adelgid populations remain just east of Bristol, Virginia and have not crossed over into Tennessee. Abingdon, Virginia remains infested with this insect. New predator introduction (*Pseudoscymnus*) for the adelgid remains promising, although it is slow in spreading and has not made a visible impact on the insect. **Adelgids** covered the trunk of white pines with white wax in Cocke and Robertson Counties.

Hickory bark beetles killed scattered trees in East and Middle Tennessee. **Boxelder bugs** accumulated in large numbers on trees and homes in scattered locations in East Tennessee.

Praying mantises laid eggs in high numbers on 3 acres of white pine Christmas trees in Claiborne County and 2 acres of Virginia pine Christmas trees in Wilson County. **Midges** infested 5% of the terminals of Virginia pine Christmas trees in Wilson County. *Ips grandicollis* and *Pityogenes hopkinsi* killed a stressed white pine in Hamilton County.

Tennessee Southern Pine Beetle Counties - 1999

<u>County</u>	<u># Spots</u>	<u># Trees</u>	<u>M Bd Ft</u> <u>(Doyle)</u>	<u>Cords</u>	<u>\$ Amount</u>
Anderson***	84	6,518	343	285	76,462
Bledsoe	50	835	44	37	9,805
Blount	1	36	-----	5	71
Bradley	1	102	8	-----	1,743
Campbell	3	130	10	-----	2,110
Carroll	2	12	-----	2	52
Carter***	185	25,481	1,032	1,593	240,376
Chester	29	828	47	31	12,978
Cocke	4	68	4	3	887
Cumberland	83	5,591	136	489	35,606
Fayette	2	85	4	4	1,258
Fentress**	128	7,868	414	344	92,288
Greene**	16	1,026	42	64	9,677
Hamilton*	224	17,234	907	754	202,160
Hardeman	21	444	25	17	6,968
Hardin	41	1,393	40	113	13,187
Henderson	11	161	5	12	1,656
Jefferson	3	1,978	159	1	33,661
Johnson***	20	1,044	42	65	9,845
Knox	26	1,591	77	80	17,458
Loudon*	50	3,623	176	181	39,726
McMinn	5	184	3	18	888
McNairy	6	365	12	27	3,768
Meigs*	83	6,421	104	642	31,061
Monroe**	166	8,300	471	311	103,715
Morgan*	382	44,723	2,536	1,677	558,864
Overton	2	81	4	4	963
Pickett*	48	428	23	19	5,021
Polk**	135	6,750	383	253	84,348
Rhea***	78	6,763	164	592	43,084
Roane***	389	36,884	1,942	1,614	432,676
Scott***	212	18,066	732	1,129	170,415
Sequatchie	50	850	14	85	4,112
Sevier	2	820	63	6	13,378
Sullivan***	50	8,376	339	524	79,018
Unicoi***	213	39,585	2,244	1,484	494,665
Union	5	667	45	14	9,696
Washington***	105	20,693	1,173	776	258,582
Wayne	53	3,457	98	281	32,719
White	10	210	3	21	1,016
Total	2,978	279,671	13,868	13,557	3,135,963

* Outbreak

** Spots on federal land

*** Outbreak county with spots on federal land included

PESTS AFFECTING NURSERY, SOD, AND AGRICULTURAL CROPS IN TENNESSEE – 1999

Gray Haun

Tennessee Department of Agriculture
PO Box 40627, Melrose Station, Nashville, TN 37204

Boll Weevil - *Anthonomus grandis* Boheman

The boll weevil (*Anthonomus grandis* Boheman) has been a serious agricultural pest of Tennessee cotton since the early 1900's and 1999 was no exception. Substantial numbers of weevils continue to be captured in the major cotton-producing areas of West Tennessee, particularly in the northern counties of West Tennessee where the Boll Weevil Eradication Program (BWEP) has not started. Such was not the case in Middle Tennessee where the BWEP has been operational since 1994. A total of 14,776 acres of cotton were certified in Middle Tennessee in Coffee, Franklin, Giles, Grundy, Lawrence, Lincoln, and Rutherford Counties. This was a 59% increase from the 9240 acres certified in 1999. A total of 22 weevils were captured in Middle Tennessee – five in Lawrence County and 17 in Giles County. All of these were single catches of migratory weevils with no reproduction being detected.

Southwest Tennessee continued to be the site of the major portion of BWEP activity in 1999 as the program entered its first full year of operation, following a successful diapause spray program in 1999. Cotton acreage also increased dramatically in that area with a total of 158,468 acres, up 34% from 1999. This cotton was located in south Chester, Fayette, Hardeman, Hardin, south Haywood, McNairy, Shelby, and Tipton counties. 1999 proved to be a difficult year for program managers due in large part to the delay of the Northwest Tennessee program. Season-long weevil migration forced program managers to adjust trap triggers upward to counteract the skewed data migratory weevils bring. This was done in order to simultaneously protect against weevil damage and avoid decimating the beneficial insect population that might lead to a secondary pest outbreak. As it turned out, 1999 posed no major secondary cotton insect problems in Southwest Tennessee, however migratory weevils caused the 4.75 applications budgeted for the region to swell to 9.31 actual applications, with apparent long-term budgetary consequences.

Major expansion is planned for Northwest Tennessee in 2000 as approximately 400,000 additional acres of cotton will enter the Boll Weevil Eradication Program with a fall diapause program. Three work units are being mapped with offices opening in Alamo, Brownsville and Dyersburg. This expansion will bring the entire state of Tennessee into eradication, with the exception of a few hundred acres west of the Mississippi River that will be operated by the Arkansas BWEP. Therefore the BWEP is fully operational, either in an active or maintenance stage, in all cotton-growing areas east of the Mississippi River.

According to the Tennessee Agricultural Statistics Service, the state harvested a total of 565,000 acres of cotton in 1999, up from 445,000 acres in 1998. Lint production, consisting of 590,000 bales, was valued at \$124 million, with cottonseed production valued at \$17.7 million.

Gypsy Moth Program – *Lymantria dispar* (Linnaeus)

In 1999 a total of 19,755 traps were placed in Tennessee. A breakdown of traps per county can be found on the map that follows. A total of 159 Gypsy moths were caught during the 1999 trapping season. Anderson, Cumberland, Davidson, Hamilton, Monroe, Scott, and Sevier counties had multiple catches in single traps. Infestations (two or more life stages) were found in Cumberland, Scott, and Sevier Counties. (See map). All trap catch locations will be delimited in the 2000 season.

Imported Fire Ant - *Solenopsis invicta*, *Solenopsis richteri*, & hybrid

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), 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:

Bradley County. The entire county.

Chester County. The entire county.

Decatur County. That portion of the county lying south of Interstate Hwy. 40.

Fayette County. The entire county.

Franklin County. That portion of the county lying south of TN Hwy. 50 moving east from the Moore County line to U.S. Hwy. 64 going east to U.S. Hwy. Alt. 41 to the Grundy/Marion County line.

Giles County. That portion of the county lying south of U.S. Hwy. 64 going east from the Lawrence County line to U.S. Hwy. 31 north to TN Hwy. 129 east to the Marshall County line.

Hamilton County. The entire county.

Hardeman County. The entire county.

Hardin County. The entire county.

Haywood County. That portion of the county lying south of Interstate Hwy. 40.

Henderson County. That portion of the county lying south of Interstate Hwy. 40.

Lewis County. That portion of the county lying south of TN Hwy. 48 moving east from the Perry County line to the intersection with TN Hwy. 20; then southeast on TN Hwy. 20 until it reaches the Lawrence County line, exiting the county, then returning to Lewis County, until it reaches the Lawrence County line again.

Lawrence County. The entire county.

Lincoln County. That portion of the county lying south of TN Hwy. 50.
Madison County. The entire county.
Marion County. The entire county.

Marshall County. That portion of the county lying south of TN Hwy. 129 going east to U.S. Hwy. Alt. 31, north to TN Hwy. 50 southeast to the Lincoln County line.
McMinn County. The entire county.
McNairy County. The entire county.
Meigs County. The entire county.
Monroe County. That portion of the county lying west of TN Hwy. 68; also the entire city limits of Tellico Plains, TN.
Moore County. That portion of the county lying south of TN Hwy. 50.
Perry County. That portion of the county lying south of Latitude 35 degrees 45 minutes.
Polk County. The entire county.
Rhea County. The entire county.
Shelby County. The entire county.
Wayne County. The entire county.

Since 1994, new introductions of imported fire ants in counties other than those listed in the quarantine include the following: Anderson, Benton, Blount, Coffee, Davidson, Dyer, Gibson, Humphreys, Knox, Maury, Montgomery, Rutherford, Sequatchie, Sevier, Sumner, Unicoi, Warren, Washington, and Williamson. (See map of regulated areas)

Japanese Beetle - *Popillia japonica*

The Japanese beetle (*Popillia japonica*) became permanently established in the northeast part of the State in the late 1960's. It continues to spread into more counties of west and middle Tennessee. No new areas were found to be infested with Japanese Beetles in 1999. (See map for infested areas)

Pine Shoot Beetle – *Tomicus piniperda*

In 1999 there were 22 sites trapped with no positive catches. (See map for trap locations)

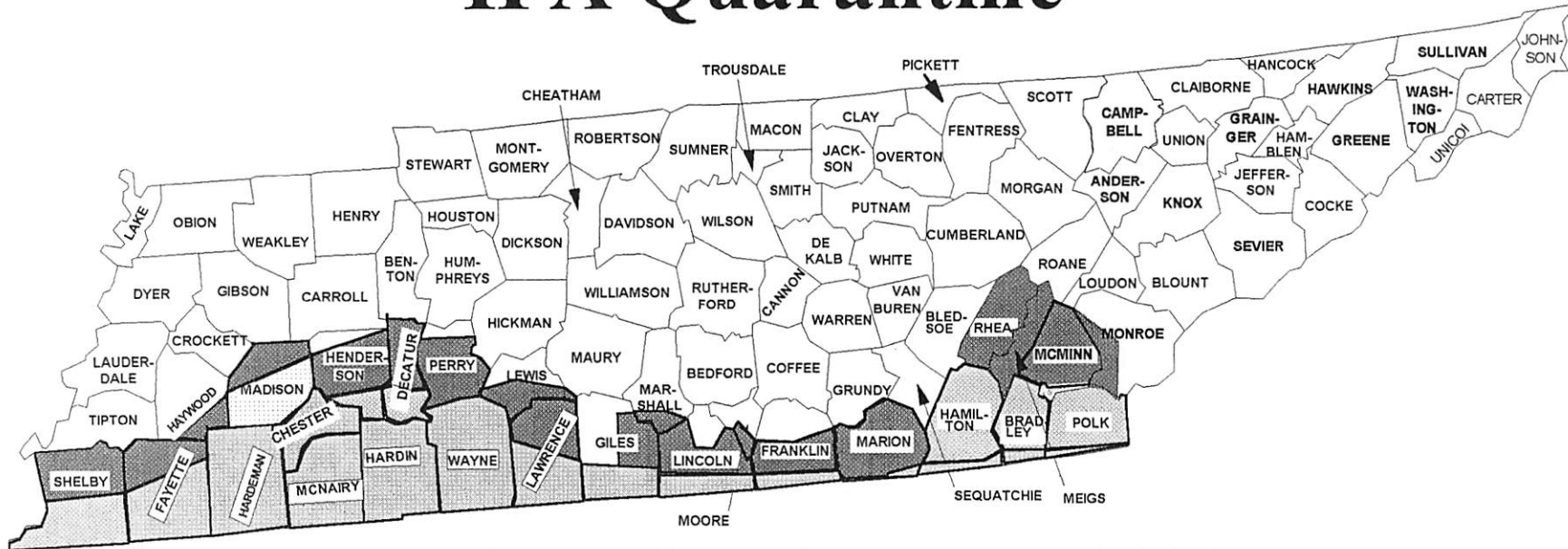
Pink Bollworm – *Pectinophora gossypiella*

In 1999 there were 399 traps placed to check for Pink Bollworm by TDA and USDA personnel in the cotton growing areas. No Pink Bollworm were caught. (See map for location of traps)

Southern Pine Beetle

There are 15 counties considered to have epidemic populations of Southern Pine Beetle and 25 other counties considered infested in the state of Tennessee by the State Division of Forestry. (See map for location of counties).

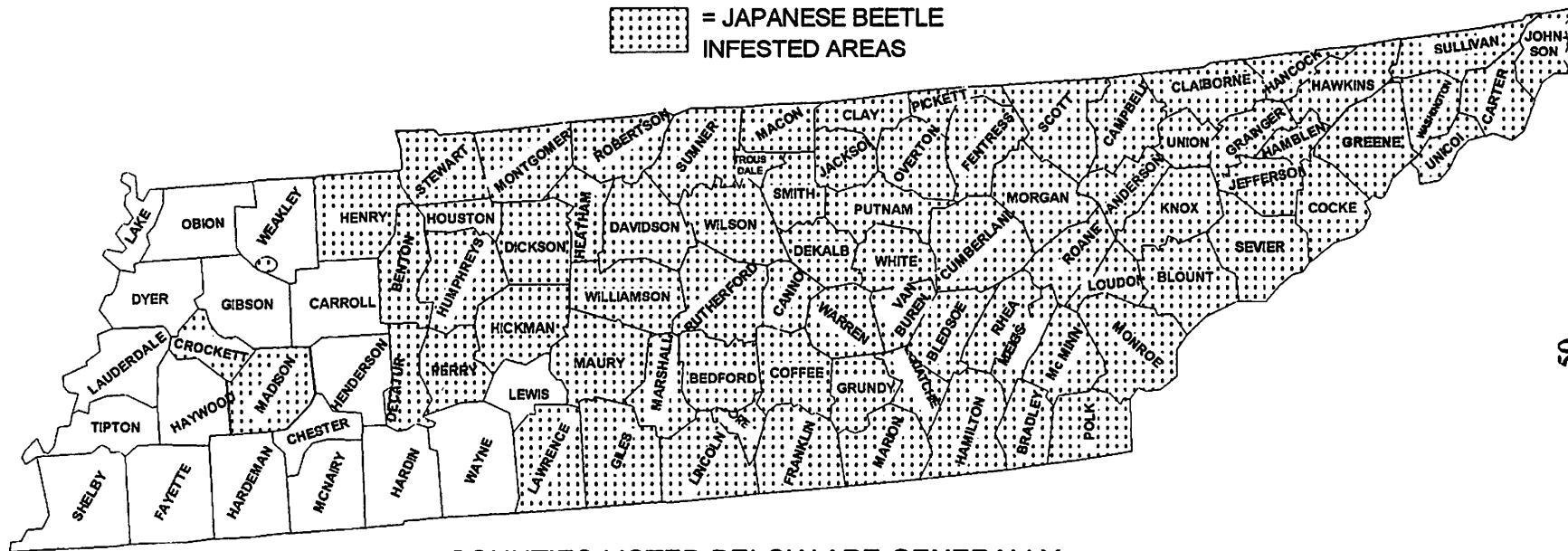
1996-1999 TENNESSEE IFA Quarantine



-  Regulated Areas - 1996
-  Regulated Areas - 1997
-  Regulated Areas - 1998
-  Regulated Areas - 1999

TENNESSEE MAP INDICATING THE DISTRIBUTION OF JAPANESE BEETLE INFESTED AREA 1999

 = JAPANESE BEETLE
INFESTED AREAS



50

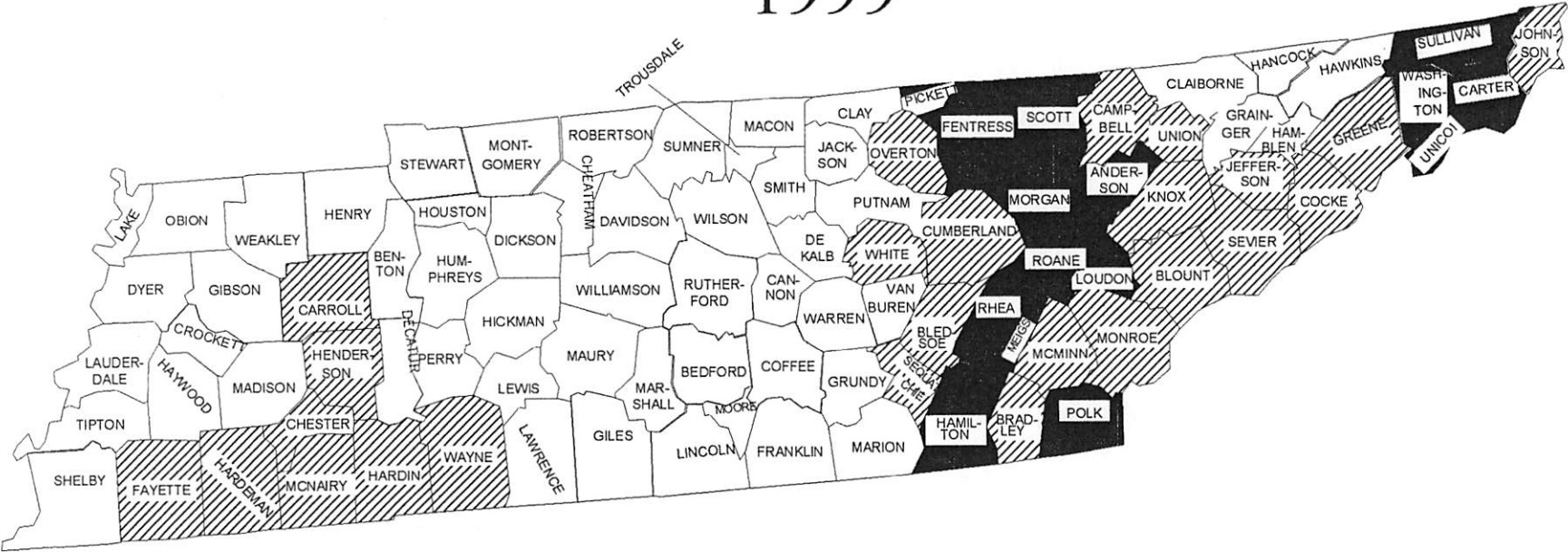
COUNTIES LISTED BELOW ARE GENERALLY INFESTED WITH JAPANESE BEETLE

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

A Portion of - Weakley County - the city limits of Greenfield

Counties Infested By The Southern Pine Beetle in Tennessee

1999



 = Epidemic Counties (15)

 = Other Infested Counties (25)

HISTORICAL NOTES

Presidents of the Tennessee Entomological Society (1973 - Present)

<u>President</u>	<u>Term</u>	<u>Affiliation</u>
Mendell Snodgrass	'73 - '74	USDA
Omar Smith	'74 - '75	Memphis State University
Don Clements	'75 - '76	Cook's Pest Control
Gary Lentz	'76 - '77	University of Tennessee
Chester Gordon	'77 - '78	Tenn. Dept. of Agriculture.
Gene Burgess	'78 - '79	University of Tennessee
Reid Gerhardt	'79 - '80	University of Tennessee
Harold Bancroft	'80 - '81	Memphis State University
Joe Dunn	'81 - '82	American Cyanamid Company
Bill Van Landingham	'82 - '83	Tenn. Dept. of Agriculture
Carl Brown	'83 - '84	Memphis State University
Charles Pless	'84 - '85	University of Tennessee
Michael E. Cooper	'85 - '86	Tenn. Dept. of Agriculture
Elmo Shipp	'86 - '87	Mobay
Bill Shamiyeh	'87 - '88	University of Tennessee
Harvey Barton	'88 - '89	Arkansas. State University
Harry Williams	'89 - '90	University of Tennessee
Bruce Kauffman	'90 - '91	Tenn. Dept. of Agriculture
Jamie Yanes, Jr.	'91 - '92	American Cyanamid Company
Jerome Grant	'92 - '93	University of Tennessee
Russ Patrick	'93 - '94	University of Tennessee
Lynn Snodderly	'94 - '95	Tenn. Dept. of Agriculture
Paris Lambdin	'95 - '96	University of Tennessee
Frank Hale	'96 - '97	University of Tennessee
Steve Murphree	'97 - '98	Belmont University
Clete Youmans	'98 - '99	American Cyanamid

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

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

**Secretaries of the Tennessee
Entomological Society (1991 - Present)**

Gary Lentz	'91 - '93	University of Tennessee
Gary Lentz	'93 - '99	University of Tennessee
Gary Lentz	'99 -	University of Tennessee

Treasurers of the Tennessee Entomological Society (1991 - present)

<u>Treasurer</u>	<u>Term</u>	<u>Affiliation</u>
Harvey Barton	'91 - '94	Arkansas State University
Harvey Barton	'94 - '97	Arkansas State University
Steve Powell	'97 - '99	TN Dept. of Agriculture
Steve Powell	'99 -	TN Dept. of Agriculture

Editors of the Tennessee Entomological Society (1991 - present)

<u>Editor</u>	<u>Term</u>	<u>Affiliation</u>
Gray Haun	'91 - '92	TN Dept. of Agriculture
Gray Haun	'92 - '95	TN Dept. of Agriculture
Gray Haun	'95 - '98	TN Dept. of Agriculture
Gray Haun	'98 - '99	TN Dept. of Agriculture
Lynn Snodderly	'99 -	TN Dept. of Agriculture

**Board of Directors
Members at Large**

<u>Member</u>	<u>Term</u>	<u>Affiliation</u>
Gary Lentz	'87 - '88	University of Tennessee
Blake Bevill	'87 - '88	Arkansas State University
Michael E. Cooper	'88 - '89	TN Dept. Agriculture
Jay P. Avery	'88 - '89	University of Tennessee
Joe Dunn	'89 - '90	American Cyanamid Company
Charles Pless	'89 - '90	University of Tennessee
Paris Lambdin	'90 - '91	University of Tennessee
Jim Keener	'90 - '91	TN Dept. of Agriculture
Steve Powell	'91 - '92	TN Dept. of Agriculture
Lee Greer	'91 - '92	Valent
Alan Hopkins	'92 - '93	Miles, Inc.
Donald Ourth	'92 - '93	University of Memphis
Mark Carder	'93 - '94	University of Tennessee
Rich Emerson	'93 - '94	TN Dept. of Agriculture

Members at Large - con't

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

Historians of the Tennessee Entomological Society (1973 - Present)

<u>Historian</u>	<u>Term</u>	<u>Affiliation</u>
Charles Pless	'73 - '76	Univ. of Tennessee
Herb Morgan	'76 - '79	USDA
Mendell Snodgrass	'79 - '82	USDA
Russ Patrick	'82 - '87	Univ. of Tennessee
Russ Patrick	'87 - '92	Univ. of Tennessee
Harry Williams	'92 - '99	Univ. of Tennessee

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

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

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

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

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

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

Richard E. Caron Outstanding Entomologist Award

<u>Recipient</u>	<u>Year</u>	<u>Affiliation</u>
Harry Williams	1995	Univ. of TN (Retired)
Harvey Barton	1996	Arkansas State Univ. (Retired)
Carroll Southards	1997	Univ. of TN (Retired)
-----	1998	

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

<u>Recipient</u>	<u>Year</u>	<u>Location</u>
Jay Avery	1986	Knoxville, TN
Laura Rogers	1987	Knoxville, TN
Jason Oliver	1988	Knoxville, TN
Steve D. Powell	1989	Knoxville, TN
Robert C. Brown	1990	Knoxville, TN
Donald L. Sudbrink, Jr.	1991	Knoxville, TN
Deborah Landau	1992	Knoxville, TN
Deanna Colby	1993	Knoxville, TN
Lee Holt	1994	Knoxville, TN
Kenneth Copley	1995	Knoxville, TN
Dina Roberts	1996	Memphis, TN
Bryan Hed	1997	Knoxville, TN
Gary Moughler	1998	Knoxville, TN
Andrew Beld	1999	Nashville, TN

**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 5. Duties and Powers of the Treasurer: The Treasurer shall keep full and accurate accounts of the books of the Society and shall deposit all monies and the valuable properties and effects in the name of and to the credit of the Society in such depository or depositories as may be designated by the Board of Directors. The Treasurer shall disperse funds as may be ordered by the Board, getting proper receipts for such disbursements; and shall render to the Board of Directors whenever required by it, an accounting of all transactions as Treasurer. During each annual meeting, the Treasurer shall give a report on the annual financial condition of the Society. The Treasurer shall, in general, perform all the duties incident to the office of Treasurer of the Society.

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

Section 7. Duties and Powers of the Historian: The Historian shall maintain and be responsible for keeping a complete and accurate history of the activities of the Society from year to year.

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

Article 9. Board of Directors

Section 1. Makeup and Responsibilities: The Board of Directors shall consist of the immediate past-President, the President, President-Elect, Secretary, Treasurer, Editor, and Historian of the Society and two members-at-large. The members-at-large shall be elected at the Annual Meeting of the Society and shall serve a term of one year. Any three (3) Directors shall constitute a quorum for the transaction of business. All properties, property rights, objects and purposes of the Society shall be managed, promoted, and regulated generally by the Board of Directors.

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

Section 3. Annual Meetings: The Board of Directors shall meet immediately after the adjournment of the annual meeting of the members for the transaction of such business as may

come before the Board. No notice of such meeting shall be required, and should a majority of the newly-elected Directors fail to be present, those present may adjourn, without further notice to a specified future time.

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

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

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

Article 10. Miscellaneous Provisions

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

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

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

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

Article 11. Amendments

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

OPERATING PROCEDURES OF THE TENNESSEE ENTOMOLOGICAL SOCIETY

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

Changes in Operating Procedures

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

Registration and Dues

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

The Board of Directors

The Board of Directors shall:

1. Consist of the immediate past-President, the President, President-Elect, Secretary, Treasurer, Editor, and Historian of the Society and two members-at-large.
2. Be responsible for management of the TES and conduct the affairs of the organization.
3. Conduct such business of the organization as is not delegated to the officers or committees and receive from the officers and committees reports and recommendations requiring specific board action or requiring recommendation for action by the membership.

4. Be responsible for changes in the manual of operating procedures after study and recommendation by the Constitution and Operating Procedures Committee.
5. Be responsible for transacting any official business.
6. Be responsible for assembling the board meetings.
7. Nominate honorary members to be voted on by membership.

President

The President shall:

1. Serve as Chairman of the Board of Directors, prepare an agenda for meetings of the Board of Directors and preside at such meetings.
2. Be responsible for determining that the decisions of the Board of Directors are correctly enforced within the framework of the organization's Constitution and By-laws.
3. Select chairman of committees at annual meeting and appoint committee members.
4. Serve as ex-officio member of all committees, maintain close liaison with the chairman of the committees, and encourage and assist them with development of program beneficial to the organization.
5. Work with the chairman of the program and local arrangements committees in planning the programs for annual meetings.
6. Preside at the general or introductory session of the annual meeting.
7. Advise all officers and board members on significant activities of the organization and solicit their suggestions.
8. Serve as the official representative for TES, when appropriate.

President-Elect

The President-Elect shall:

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

2. Serve as chairman of the program committee, and select the membership of that committee with the President and Board of Directors' approval.
3. Work with the Local Arrangements Chairman in the planning of all details of the annual meeting.
4. Prepare and mail announcements of the annual meeting. Assist with the printing of programs and mailing of programs.
5. Prepare and have the program of the annual meeting in print.
6. Be responsible for reminding speakers at each annual meeting to prepare papers before the meeting according to prescribed standards of the organization and to have these papers at the time of the presentation.

Secretary

The Secretary shall:

1. Have charge of the records and seal of the TES.
2. Take the minutes of all official business meetings of the association. Supply a copy of these minutes to the membership, Board of Directors and committee chairmen as necessary.
3. Consult with the President and inform all officers and board members of occurrences of any official meetings of the Board of Directors.
4. Maintain current lists of members and provide these along with the minutes of the annual business meeting to those persons with official need to know.
5. Make any mailing to the membership as needed or designated by the President or Board of Directors. Maintain a supply of the organizational supplies and letterhead paper for use by the officers.
6. Maintain a supply of operating procedures and provide copies to officers and board members and committee chairmen.
7. Serve as a member of the membership committee.

Editor

The Editor shall:

1. Chair the Publication and Editorial Committee.
2. Perform or be responsible for all editorial duties of the organization including the newsletter and any other publication of the organization.

Treasurer

The Treasurer shall:

1. Be responsible for the financial affairs of the TES. This includes depositing all money received by the TES into appropriate Association accounts, handling the TES's money for maximum income (upon consultation with the Finance Committee), and paying of all expenses and invoices received by the TES.
2. Serve as a member of the Finance Committee.
3. Provide a written financial report to the Board of Directors at least annually, and for the published business meeting minutes. Make an oral financial report as the annual business meeting and at Board of Director meetings as necessary. Provide the necessary information for the Auditing Committee's activities.

Immediate Past-President

The Immediate Past-President shall:

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

Committees

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

Program Committee

The Program Committee shall:

1. Plan the general program format to fit the annual meeting time established by the general membership.
2. Contact invitational speakers and make arrangements for an honorarium, if appropriate.
3. Request papers from the general membership and establish a deadline for submittal of titles.
4. Prepare a program outline for printing.
5. Arrange to have chairpersons for each session.
6. Compile abstracts from program speakers for the proceedings of the program.

Local Arrangements Committee

The Local Arrangements Committee shall:

1. Be responsible for all physical arrangements for the Annual Meeting, working cooperatively with the Officers.
2. Reserve meeting rooms for estimated attendance at the Annual Meeting.
3. Specific Responsibilities will include:
 - a. Arranging for visual and audio equipment, including projectors.
 - b. Liaison with Treasurer regarding registration help, convention typewriters, etc.
 - c. Signs for sessions and activities; coordinate with Program Chairman.
 - d. Helping arrange transportation or lodging of guest speakers if needed; coordinate with Program Chairman.
 - e. Preparing a report of activities for inclusion in the minutes of the business meeting.

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

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

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

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

Membership Committee

The Membership Committee shall:

1. Encourage any interested person in Entomology to join our Society.
2. Send information about the Society to heads of Biology and Zoology Departments at all colleges and universities in the state, enclosing a few applications.
3. Encourage interested people of Pest Control organizations and other agricultural businesses to join the Society.
4. The Secretary shall send at least two blank membership applications to each member asking them to give to good prospects.
5. Each committee member should make a conscientious effort to enroll as many new members during the year as possible.
6. When notices of annual meetings are sent to major newspapers, television, and radio stations, an invitation to interested people could be given at that time.
7. The Chairman should coordinate this committee's efforts with the publicity and other committees when appropriate.
8. Collect dues at the annual meeting.

Auditing Committee

The Auditing Committee shall:

1. Review and certify the accuracy of the financial records and books of the Treasurer prior to the general business session of each Annual Meeting.
2. Conduct special audits as may be directed by the President or the Board of Directors.
3. Report any mistakes or misuses found by the committee to the President for appropriate action prior to the general business session.
4. Prepare a report of the committee's findings, with recommendations, for presentation at the general business session.

Nominating Committee

The Nominating Committee shall:

1. Present a slate of nominees from the active membership of the TES which will include a nominee for President-elect, and two nominees for members-at-large on the Board of Directors every year. The Secretary, Editor and Treasurer hold office for three years, and shall be eligible for re-election. In each case, it is suggested that the Nominating Committee present more than one nominee for each position.
2. Secure the prior approval of all nominees before their names are put before the membership.
3. Submit a written report to the Board of Directors consisting of current committee actions and suggestions for improvement.

Awards Committee

The Awards Committee shall:

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

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

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

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

5. Contact the TES Treasurer about preparing a \$50.00 check to be given to the Student Paper Competition winner during the business meeting of the annual meeting.

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

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

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

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

²Contact either Dr. Reid Gerhardt or Dr. Gary Lentz about having plaques made at least one month before the annual meeting.

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

Prediction, Evaluation Committee

The Prediction and Evaluation Committee shall:

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

Constitution and Operating Procedures Committee

The Constitution and Operating Procedures Committee shall:

1. Annually review the Constitution and Operating Procedures and develop recommendations for improvements or needed changes and submit these to the Board of Directors for study and approval.
2. The Chairman of the Constitution Committee shall prepare adoption of amendments at any annual or special meeting.
3. The Chairman of the Constitution Committee shall coordinate with the Secretary in inserting such amendments into the notice and proceedings of the meeting.

Publication and Editorial Committee

The publication and Editorial Committee shall:

1. Determine and make recommendations to the Society of the type of publication suitable to the Society's needs and when such a publication should be initiated.
2. Set up guidelines and standards for such a publication, and investigate possible mechanisms for implementation upon decision of the organization.
3. Be responsible for soliciting and gathering of articles for publication.
4. Act as an editorial committee in screening such articles to be published.
5. The chairman will be responsible for the coordination of this committee's responsibilities with the Board, Secretary-Treasurer, and other committees as necessary.

Publicity Committee

The Publicity Committee shall:

1. Be responsible for developing and implementing an effective public relations program for the Tennessee Entomological Society.
2. Prepare general news releases on the society's activities and accomplishments and publicize the meetings. Specifically, these things should be done:
 - a. Prepare and release general news release as soon as Program Committee has planned a theme or area of interest for either meeting. Also, include location of meeting and time. This should begin by mid-summer and meeting dates should be sent to magazines and trade publications such as Delta Farm Press, Southeast Farm Press, Tennessee Market Bulletin, Ag Pesticide Notes, newspapers, etc.
 - b. A follow-up news release should be issued about one month before each meeting. Location of meeting, date, time, and outstanding invitational speakers could be mentioned.
 - c. Prepare follow-up news release after the meeting for use by news media.
 - d. Send notice to Entomological Society of America and other state societies.
3. Maintain close liaison with the Program Committee in obtaining early copies of the program of both meetings for publicity purposes.

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

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

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

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

8. Direct mail to members.

1. Dates ('98), ('99) refer to last meeting attendance or last dues payment.
(\$5.00 Regular, \$1.00 Student, \$25.00 Sustaining/Corporate).

2. H = Honorary Member

TENNESSEE ENTOMOLOGICAL SOCIETY

MEMBERSHIP LIST

OCTOBER 1999

- | | | | |
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