THE FIREFLY

Proceedings of the 1992 (Nineteenth) Annual Meeting of the Tennessee Entomological Society

October 8 - 9 , 1992
Ramada Inn - Southeast
Nashville, Tennessee

Volume Seven

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RICHARD EDWARD CARON

Richard E. Caron, associate professor of extension entomology at the University of Tennessee, died suddenly of an apparent heart attack on 26 December 1991 at his home in Jackson, Tennessee.

Dr. Caron was born in Pawtucket, Rhode Island, on 7 April 1950. He graduated from Lincoln High School in Lincoln, Rhode Island, in 1968 and entered the University of Maine at Orono that year. He was elected to Phi Kappa Phi in 1971 and earned his bachelor of science degree in entomology in 1972. He began his graduate studies in the Department of Entomology at North Carolina State University while working as a field researcher and technician. He earned his master of science degree in 1976 studying corn earworm production on corn and factors affecting its survival. He continued in the department as a research assistant working on boll weevil diapause induction. Richard began his doctorate program in 1978, investigating interactions of soil insecticides, cultivars and planting dates on the soybean-insect complex, and graduated in August 1981. He was elected to Sigma Xi in April 1981.

Richard began his postgraduate professional career as assistant professor of extension entomology for the University of Tennessee at Jackson. Dr. Caron was promoted to associate professor in 1986. He was the State IPM Coordinator and was responsible for all state IPM programs. He worked tirelessly with extension agents and producers, developing ecologically sound IPM programs for cotton and soybean across the state. He was a member of the Southern Regional IPM Coordinators and was chairman during 1988-89. He was never too busy to help a grower, homeowner or professional who had need of his expertise. He was currently co-chairman of the Tennessee Boll Weevil Eradication Technical Advisory Committee. In addition to his assignments on insects affecting row crops, Richard worked with pecan and forest insects.

Richard was a member of the Entomological Society of America and was especially active in state and regional professional societies. He served on four Southeastern Branch ESA committees from 1983-89. He was also a member of the Tennessee Entomological Society, Mississippi Entomological Association, North Carolina Entomological Society, South Carolina Entomological Society, Tennessee Agricultural Chemical Association, Tennessee Association of Agricultural Agents and Specialists, National Association of County Agricultural Agents and the West Tennessee No-Till Farmers Association. In the Tennessee Entomological Society, Richard served on five committees from 1981-1991, served two highly effective consecutive terms as Secretary/Treasurer and Board Member and was President-Elect and Program Chairperson at the time of his death. He was equally active in the Tennessee Agricultural Chemical Association. He served on six committees (chairing one), was editor of the TACA Newsletter (1985-1987) and was a Board Member 1988-1990. The Association posthumously named its undergraduate student award "The Richard E. Caron Undergraduate Student Award" in recognition of his contributions to the awards committee and to the Association. Richard promoted 4-H entomology by serving on the Mid-South Fair Exhibit Committee as chairman or co-chairman from 1983-1989.

While at North Carolina State University, Richard met Paula Katrina North. They were married on 20 July 1974. Their son, John Cabot, was born in 1982. Richard was a devoted husband and father. In addition to his wife and son, Richard is survived by a sister, Arlene Rankowitz, and a brother, Ron Caron. The family requests memorials be made to the American Heart Association, 18 Stonecreek Circle, Jackson, TN 38305.

Gary L. Lentz
Jackson, Tennessee

PROCEEDINGS OF THE NINETEENTH ANNUAL MEETING
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Detritus Inhabiting Arthropods Associated with Fraser Fir Stands in the Great Smoky Mountains National Park

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CANCELLED

Seasonal Incidence of Selected Chloropid Flies in 'Ky. 31' and 'Forager' Tall Fescue in Tennessee

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NO ABSTRACT SUBMITTED

Black Flies in the Great Smoky Mountains National Park

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Larval black flies were collected monthly from selected streams in the Great Smoky Mountains National Park between June 1991 and July 1992. One large size 10-15 m wide stream (Little River) and one medium size 3-5 m wide stream (Mill Creek) will be discussed.

Larvae of *Simulium tuberosum* (Lundström) complex, *S. venustum/verecundum* Say, *S. quebecense* Twinn and *Prosimulium mixtum* Syme & Davies were collected from leaves and sticks submerged in the Little River. *S. tuberosum* was present almost year around, while *S. venustum/verecundum* were present only in October, November, March, April and May. *P. mixtum* larvae were collected when the water temperature was lowest in December, January, February, March and a few in April. *S. quebecense* larvae were rare and only collected in March, April, and May.

Chromosome identification has been suggested to separate sibling species of black flies. Our study of chromosome identification indicated *S. tuberosum* complex species was FG/CDE and the *S. venustum* species was CC. Future research will further address species differentiation with chromosome identification.

Life History of the Pyralid *Dicymolomia julianalis* (Walker)

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The life cycle of the pyralid *Dicymolomia julianalis* includes a diet of musk thistle seeds, bagworm eggs and larvae, and cat-tail seeds. This range of food sources, which takes the moth from being a parasitoid/predator to a plant eater to even a scavenger, is considered unusually diverse. Data suggest that *D. julianalis* has three generations per year in Tennessee, where it overwinters inside the female bagworm, emerging adults oviposit in cat-tails for their first generation during the spring, then they infest thistle in the summer, and finally oviposit once again in the bagworm in the fall. Although *D. julianalis* infests musk thistle, its biological control potential against this weed is low. Most of the larval infestation occurs after seed formation and dispersal. Research will continue to investigate the seasonality, infestation levels, and interactive associations of *D. julianalis* on cat-tails, musk thistle, and bagworms.

Calmodulin and Phenoloxidase as Regulatory Proteins in *Heliothis virescens* Larvae

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Phenoloxidase is found in insects and is thought to be involved in insect defensive mechanisms. Calmodulin, an intercellular protein, regulates many calcium-dependent enzymes. In this study, calmodulin was detected using a phosphodiesterase activation assay. Whole body and fat body tissue extracts of *Heliothis virescens* larvae were used for calmodulin detection. The relationship of calmodulin and phenoloxidase was determined using a calmodulin-affinity column. The molecular weight and characterization of the phenoloxidase enzyme found in *H. virescens* was determined using gel filtration chromatography, SDS-PAGE and immunoblotting techniques.

An Entomologist's Role in the Study of Dogwood Anthracnose

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In 1978, a fungal disease was discovered to infect and kill native flowering dogwoods, *Cornus florida* Link., in the northeastern United States. The disease has since spread southward along the Appalachian mountain range to Georgia and Alabama, affecting dogwoods on more than 2.3 million hectares. The disease was named dogwood anthracnose, and the causal agent was identified as *Discula destructiva* Redlin sp. Nov.

Little information is available on the methods of dissemination of this pathogen. Because of their abundance and activity, insects may play a role in dissemination of *D. destructiva.* The primary objective of our research was to determine if arthropods could carry and disseminate viable conidia of the disease-causing organism, *D. destructiva,* both externally and/or internally, and, if so, to determine the length of time that viable conidia could be carried and deposited by insects. Because of its common occurrence and availability, the adult convergent lady beetle (CLB), *Hippodamia convergens* Guerin-Meneville (Coleoptera: Coccinellidae), was selected as our model insect.

All CLBs transported viable conidia externally; ingested conidia were viable and/or transported 95% and 100% of the time for VA 17b isolate and TN 8 isolate, respectively. Isolate type did not affect Discula growth on PSA. Viable conidia were carried and deposited for as many as 16 days after infestation. Immediately after exposure to the fungus (0 h), 100% of the CLBs deposited viable conidia to PSA; after 16 days, only 15% were depositing viable conidia. CLBs also deposited conidia onto dogwood leaves. Significantly more conidia were found on the ventral body surface than on the dorsal body surface. Mouthparts were generally heavily encrusted with conidia, possibly resulting from the adult's habit of grooming its conidia-laden appendages. Conidia also were observed among setae, singularly or in mass, sometimes contained by the protein matrix on legs, thorax, and abdomen.

Results from this research demonstrate that insects, such as the CLB, can disperse viable conidia to susceptible hosts. Further research is necessary to understand the role of insect types, e.g., a herbivore, pollinator, predator, or scavenger, in epidemiology and spread of dogwood anthracnose.

Development of NTN-33893 (Imidacloprid) for Insect Control in Tennessee Crops

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NTN-33893 is a new low-toxic, broad spectrum, systemic insecticide being developed worldwide by Bayer AG and by Miles Inc., Agriculture Division in the U.S. for control of several insect pests in numerous southern crops. NTN-33893 belongs to the nitroguanidine class of chemistry and can be highly efficacious as either a seed, soil, or foliar application. Imidacloprid is primarily effective for the control of sucking insects (e.g. aphids, whiteflies, thrips, leafhoppers, etc.) but is also active against some Coleoptera, Diptera and micro-lepidoptera. Several liquid and granular formulations have been tested and have shown excellent potential for seed, soil or foliar uses. Due to good root uptake and systemic properties, excellent insect control has been demonstrated with seed and soil applications in cotton, tobacco, vegetables, turf, fruit, ornamentals, and other crops.

Data from Tennessee and other southern states indicate good activity with seed, soil and foliar applications for thrips, whitefly and aphid control in cotton. University of Tennessee studies conducted in 1991 and 1992 indicate transplant water solutions and foliar sprays were effective for controlling red tobacco aphids (*Myzus nicotianaein*) in tobacco. Evaluations in vegetable crops have also shown effective control of common insect pests such as cucumber beetles and aphids.

An Update on Imported Fire Ants in Tennessee

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The red imported fire ant, *Solenopsis invicta*, and the black imported fire ant, *Solenopsis richteri*, continue to invade Tennessee through both natural migration and introduction by infested plant materials brought into the state. The following counties have been quarantined for black imported fire ant infestations: Hardin Co. - that portion south of 35 degrees 20 minutes north latitude, McNairy Co. - that portion south of 35 degrees 15 minutes north latitude, Hardeman Co. - south and east of a line that follows U.S. Highway 64 from the east side of the county to the city of Bolivar, then Highway 18 from the city of Bolivar to the point it exits the county near the city of Grand Junction.

Red imported fire ants were detected during 1992 in the following counties: Blount, Campbell, Davidson, Hamilton, Knox, Madison, Monroe, Putnam, Rutherford, Shelby, Tipton, Warren, and Williamson. Black imported fire ants were detected during 1992 in the following counties: Chester, Fayette, Franklin, Giles, Hamilton, Hardeman, Hardin, Haywood, Lawrence, Lincoln, Madison, Marion, McNairy, Rutherford and Wayne.

Bledsoe County/Rhea County Gypsy Moth Eradication Project-1992

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In 1990, the fourth gypsy moth infestation in Tennessee was detected in the southwestern corner of Rhea County and a portion of Bledsoe County. Since then, egg removal, burlap banding, temporary quarantines, and a ground application of chemical insecticide have been implemented in the infested area.

In 1991 in Rhea and Bledsoe Counties, traps were located at nine per square mile intervals over 30 square miles. The infested area was further identified as approximately 3,000 acres. The Tennessee Department of Agriculture (TDA) and the Gypsy Moth Advisory Committee felt that the infestation could no longer be eradicated using the previous methods.

A gypsy moth eradication project was initiated during the winter of 1991-1992 in Bledsoe and Rhea Counties involving serial applications of biological and chemical insecticides. After a meeting with the Rhea County Commissioners in December and a subsequent meeting with the residents of the proposed spray site in February, approval of the spray project proposal as well as selection of control options was obtained. Applications of insecticides were tentatively scheduled for spring, 1992.

A cooperative funding agreement between the TDA Division of Plant Industries and the USDA Forest Service (FS) was then reached in late February, 1992. An environmental assessment was prepared by TDA and reviewed and signed by the FS indicating that the eradication project insecticide proposals did not adversely impact the area to be sprayed. An aerial spray contract was drawn up by TDA and mailed to 16 prospective bidders. Harold's Flying Service of Leland, Illinois was selected as the successful bidder.

Aerial applications of undiluted *Bacillus thuringiensis* (B.t.)(Foray 48B) and diflubenzuron (Dimilin 4L) were sprayed twice over 3,000 acres of forested to sparsely-populated land from May 5 to May 14, 1992. The spray project was coordinated by TDA, Plant Industries Division. Personnel of the Division of Forestry also assisted in the eradication effort. Technical assistance was provided by the USDA Animal and Plant Health Inspection Service Plant Protection and Quarantine Section as well as the FS.

Cool, wet weather during the first week of the project lengthened the first spray application, but more suitable weather followed for the second application of insecticides. An additive to the Dimilin 4L which combined two stickers with an anti-drift agent and an anti-

evaporation agent was included in the spray mixture from late morning onward each day this insecticide was sprayed. Biological evaluations of gypsy moth caterpillars indicated that the larvae were primarily in the second instar when the project was conducted.

An evaluation of the Dimilin 4L applications was conducted by the TDA Division of Plant Industries' pesticide monitoring section. Soil, water, and drift card samples were taken and then evaluated by the chemists of the TDA, Technical Services Division. These evaluations indicated that the area was sprayed properly within the designated blocks.

Gypsy moth trapping in the spray project area began on May 15, 1992. In Rhea and Bledsoe Counties, 285 grid traps (9 traps per square mile) and 269 mass traps (includes 4 milk carton traps) were placed in the project area. Trapping was finished on June 8, with a total of 554 traps. Monitoring of 12 burlap bands since late April caught 39 larvae which were destroyed. No larvae were detected under bands after May 4.

Moth flight began the week of July 5. Six moths were caught in five traps in Rhea County which represents a 99 percent reduction in the resident gypsy moth population. All catches were within one half mile of the 1992 treatment boundary. Trapping will continue until no moths are caught for two successive years.

New Records of Arkansas Odonata

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Endemism among invertebrates, including Odonata, of the Interior Highlands of Arkansas and Missouri is well documented. Heterogeneity of the origins of Arkansas Ondonata is indicated by recently discovered species. They include ones of northern (*Lestes congener*), eastern (*Chromagrion conditum*, *Macromia alleghaniensis*, *Epitheca spinosa*), southeastern (*Telebasis byersi*, *Epitheca costalis*, *Helocordulia selysii*, *Celithemis amanda*) and southwestern (*Dythemis fugax*) affinities within North America. The addition of these nine species brings the Arkansas state list for Odonata to 133.

A Synopsis of the Genus *Tropisternus* (Coleoptera : Hydrophilidae) in Arkansas

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The purposes of this research are to present the first statewide species list, to delineate geographic distributions, and to define preferred habitats for *Tropisternus* species occurring in Arkansas. Data collected from regional museums and pertinent publications have been supplemented with collections by the authors. *Tropisternus lateralis nimbatus* is reported from 50 of Arkansas' 75 counties, representing all five physiographic regions. *Tropisternus collaris striolatus*, *Tropisternus natator* and *Tropisternus blatchleyi* also occur in all physiographic regions and are recorded for 39, 32 and 28 counties, respectively. *Tropisternus collaris mexicanus*, 16 counties, occurs primarily in the Ozark Plateaus but has also been collected in the Gulf Coastal Plain, Mississippi Embayment and Crowley's Ridge regions. *Tropisternus blatchleyi modestus*, 14 counties, is found in all physiographic regions but the Mississippi Embayment. *Tropisternus glaber*, 4 counties and 21 specimens, has been collected in the Ozark Plateaus only, to date.

Update on the Scale Insect Predator, *Chilocorus kuwanae*, in Tennessee

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Species of euonymus are among the most preferred ornamental plants sold in Tennessee. Unfortunately, *Unaspis euonymi* (Comstock) is a serious pest with heavy infestations causing discoloration, die-back, and eventual death of the plant. As such, species of *Euonymus* have often been replaced with other ornamental plantings, and some nurseries have reduced or eliminated production of *Euonymus*. Because releases of *Chilocorus kuwanae* have successfully controlled infestations of *U. euonymi* in several parts of the U.S., our objectives were to establish this predator throughout the state and evaluate its development and behavior.

Lady beetles were released at 4 sites (15-25 adults/site) onto infested plants in middle and east TN annually from 1990-1992. Fewer than 500 live adult scale insects were observed at two release sites by September, 1990. In 1991-92, lady beetles were recovered at one site in Knox Co. In laboratory tests, a random searching pattern for prey was observed in all developmental stages. The fecundity of the lady beetle increased as prey consumption increased. The most preferred ovipositional site for *C. kuwanae* eggs (0-6/site) was under female scale tests (69%). Two mated females produced 45 and 65 eggs, respectively, over a 25 day period under laboratory conditions. Egg eclosion occurred 4-6 days after oviposition.

Research Shifts : From Traditional Agriculture to Forest Ecosystems

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The entomological research program at the University of Tennessee has primarily focused on traditional row crop agriculture. Current voids in entomological knowledge in the forest ecosystem in Tennessee have caused a shift in emphasis towards more forest-related research. An interdisciplinary, multi-agency research program has evolved to address several important issues in the forest ecosystem. Cooperating disciplines include entomology, forest genetics, forest pest management, and plant pathology; cooperating agencies/institutions include the Tennessee Division of Forestry, the United States Forest Service, the National Park Service, and The University of Tennessee. Studies are underway in the Great Smoky Mountains National Park and at a Northern Red Oak Seedling Seed Orchard in Elizabethton, Tennessee. Because one of the limiting factors in managing forest pests is our lack of understanding of their biology and impact, our research addresses many research facets including biodiversity, basic biology, species composition, seasonality, and impact of selected insects on mast production.

Research is underway to provide a better understanding of insect communities and their impact on dogwood, fraser fir, mature northern red oaks, and northern red oaks in a seedling seed orchard. Our overall research objectives are to: 1) identify and monitor biodiversity, seasonal incidence and abundance of insect species, 2) identify insects associated with losses in mast production, and 3) develop management strategies to limit losses to insects and to improve acorn production.

Biodiversity studies are underway to determine composition and seasonality of insect species on northern red oak and on anthracnose-infected and healthy dogwood trees. Selected trees are treated with an insecticide on a regular basis; dead insects fall from the trees onto a tarp placed on the ground; and insects are vacuumed from the tarp using a modified Dustbuster. Collected insects are taken to the laboratory, where they are sorted, processed and identified.

Research programs must be able to shift direction when serious problems develop, when serious problems are expected, or when there is an obvious void in information. All of these situations are currently being experienced in Tennessee and research emphasis should shift to address these concerns. For example, the major front of the gypsy moth is expected to reach Tennessee in 10 to 15 years. The shifts in research that are occurring now will better prepare us to confront, understand, and manage gypsy moths in our forests and landscapes.

Development of Resistance by *Drosophila melanogaster* (Diptera: Drosophilidae) to Toxic Factors in Powdered *Acremonium*-Infected Tall Fescue Seed

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Drosophila melanogaster, the laboratory fruit fly, is a useful bioassay organism for detection of toxic factors in tissues (roots, leaves and seeds) of endophyte infected (E+) tall fescue. Survival of *D. melanogaster* in fescue-amended diets is directly related to the endophyte status of the fescue plant. The present study was undertaken to determine 1) which of several selected ergot and loline alkaloids occurring in E+ tall fescue are toxic to *D. melanogaster* at levels comparable to those normally occurring in E+ plants, and 2) if resistance to those toxic compounds can be induced by continuous rearing of *D. melanogaster* on diets containing pulverized E+ seeds. Ergot peptide alkaloids were more toxic than ergonovine but far less toxic than N-formylloline (the only loline alkaloid toxic to *D. melanogaster*). Flies were reared for five or eleven generations on diets amended with either E+ or E- pulverized seed, then transferred to E+ seed amended medium. Survival of the offspring of flies previously fed on E+ seed medium was greater than that of flies from the E- medium. Effects of specific alkaloids on flies reared continuously on E+ seed-amended diet are being investigated.

Economics of Early-Season Cotton Insect Control

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Foliar sprays and at-planting in-furrow insecticides were compared for efficacy against thrips on seedling cotton, effect on yield and the return over insecticide costs. Foliar sprays were less effective than the Temik standard against adult thrips. In 1990, lint yields were significantly increased by treatment with Temik compared to Orthene and Bidrin treatments. In 1991, lint yields were not significantly different among treatments of Bidrin, Di-Syston, Orthene or Temik. In 1990, total return per acre over insecticide cost was greatest from Temik treatment ($120) followed by Orthene ($86), Bidrin applied twice ($74) and Bidrin applied once ($64). In 1991, returns over insecticide cost for Temik, Bidrin (foliar once), Bidrin (foliar twice), Orthene and Di-Syston were $84, 75, 68, 61 and 59 per acre, respectively.

Some Entomological Notes of Interest in Tennessee for 1992

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In June of 1992, an infestation of Formosan termites, *Coptotermes formosanus*, was discovered at the Federal Express Warehouse, 3264 Democrat Road in Memphis, Tennessee. In 1984, another Formosan termite infestation took place very near to this site in the offices of U.S. Motors, 3278 Democrat Road. Inspections of the warehouse adjoining Federal Express and the 1984 infestation site were conducted with no Formosan termites found. Treatment of the Federal Express Warehouse was recently completed with follow-up inspections of this and nearby areas to be conducted this fall. Next spring, monitoring traps will be placed approximately 4 - 6 meters above the ground on security light poles in the area to detect the presence of the Formosan termite.

In August of 1992, an infestation of a drywood termite species, **Incisitermes minor*, was discovered at a home in Dyersburg, Tennessee. The home was treated and will be reinspected next spring. The colony was well-established and may have been present for as long as 15 or more years before being discovered.

The following counties are considered to be generally infested with the Japanese beetle, *Popillia japonica*: Anderson, Bledsoe, Blount, Bradley, Campbell, Carter, Cheatham, Claiborne, Clay, Cocke, Cumberland, Davidson, Dekalb, Fentress, Franklin, Grainger, Greene, Grundy, Hamblen, Hamilton, Hancock, Hawkins, Houston, Jackson, Jefferson, Johnson, Knox, Loudon, Macon, McMinn, Marion, Meigs, Monroe, Morgan, Overton, Pickett, Polk, Putnam, Rhea, Roane, Scott, Sequatchie, Sevier, Smith, Stewart, Sullivan, Sumner, Trousdale, Warren, Washington, White, Williamson, Unicoi, Union, and Van Buren.

Japanese beetle traps were placed in only a small number of locations due to limited funding available. Catches of Japanese beetles in 1992 by TDA personnel outside of the generally infested area in middle Tennessee are as follows: Rutherford (1) and Wilson (1).

In west Tennessee, there was an infestation of Japanese beetles in Bells at Pictsweet, Inc., (Crockett Co.) with 780 being captured. In Greenfield, (Weakley Co.) 2 Japanese beetles were caught.

* This was the species reported in the meeting. The Final I.D. was changed by D.A. Nickle of USDA (U.S. National Museum) to *Kalotermes approximatus* Banks.

Why do Bees " Like " Squash?

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We can only guess what bees "like" because we are not bees; however bees visit flowers to acquire food in the form of pollen or nectar. Bees respond to stimuli presented by the flower as advertisements of potential food reward. The bright yellow petals of the squash flower is within the visual range of the bee and probably provides the initial stimulus to attract the bee. The availability of a large nectar reward is "probably" the chief reason bees "like" squash.

Pollination studies conducted in a 55 acre Zucchini squash field in West Tennessee revealed that honey bees visited female more often than male flowers (means: female 0.27; male 0.17 bees per flower). Three times as many male flowers were available per plant than were females males in this study conducted in June and July of 1992. Preferential visitation of honey bees to female flowers was believed to be directly related to higher volume of nectar produced by female flowers (78ul viz 56ul). Significantly higher (at least two times higher) numbers of bees were counted visiting at 0530 than at 0630, 0730 or at 0830 Central Standard Time.

Zucchini plants stopped flowering when a mature fruit was allowed to remain on the plant. Yields of individual zucchini plants were similar in two locations. An average visitation rate of 0.41 and 0.32 bees per female flower yielded 6.82 and 6.28 fruit per plant for the two locations.

Of 16 trials honey bees set a full fruit five times (31%) for a single visit, while bumble bees accounted for six fruit in eight trials (75%).

Placing different number of pollen grains on squash stigmas indicated that placing 25 pollen grains on a single stigmatic lobe would yield a fruit 80% of the time. Partial fruit set occurred with as few as six pollen grains. Full fruit were formed regardless whether a single lobe or three or all six lobes were used. On several occasions when more than one flower per plant were used, the flower receiving the most pollen developed while the other fruit initially appeared to develop but later aborted.

Small Mammals as Hosts of *Dermacentor variabilis* and a Model for Detection of High Risk Areas of RMSF

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Fourteen species of small mammals were captured from July 1990 through August 1991, from which 1218 immature ticks were collected, 1217 *Dermacentor variabilis* and 1 Ixodes dentatus. Mammal species were given scores of importance as hosts to immature *D. variabilis* using ANOVA and Spearman Rank Correlation. The rice rat was the most important host for immature *D. variabilis*, scoring (5), followed by the golden mouse (4), white-footed mouse (3), pine vole (2), cotton rat (1), and the Norway rat, house mouse, and short-tailed shrew all scoring (0). The potential of Rocky Mountain spotted-fever (RMSF) to occur in an area was determined using the total score of important hosts in an area and multiplying the relative abundance of important host species. RMSF of 50 trap areas ranged from 0-2.89, a RMSF of 0.76 is needed to produce 100 immature ticks on hosts per 0.4 ha. With 100% survival of immatures on hosts, this would be 252 adults per ha (RMSF threshold). Assigning a score to a small mammal species allows a quantitative method for differentiating important hosts within small mammal communities.

Tennessee Entomological Society
Minutes of the 1992 Annual Meeting
October 8 - 9, 1992

Board of Directors Meeting
(10:45 A.M., October 8)

President Yanes opened the meeting at the Ramada Inn-Southeast. The first item of business was a discussion of ways to honor President-Elect Richard E. Caron who passed away unexpectedly on December 26, 1991. An ad hoc committee had been appointed to present options to the Board. After several considerations, Yanes proposed that the Tennessee Entomological Society rename its Outstanding Entomologist Award to "The Richard E. Caron Outstanding Entomologist Award". A motion to that effect (Burgess/Dunn) passed unanimously.

A Treasurer's Report was presented by H. Barton. Two minor errors were noted on the report distributed. The number of lapel pins on hand was 27 with three being sold recently. Barton reported he was unable to open a checking account without a service charge. He suggested putting funds in excess of $1,000 in a certificate of deposit account. The $1,000 would be sufficient for most of the Treasurer's operating needs. A motion (Dunn moved) to that effect was passed.

Discussion ensued on the brochure which should attract more interest than the flyer which is currently used. C. Watson reported the estimated cost at $798/1,000 brochures. J. Yanes had checked some sources and reported costs of $2200 for color and $1215 for black and white. The use of line drawings to avoid photographs was discussed extensively. R. Patrick proposed a motion to proceed with the brochure. This motion passed. J. Grant proposed that the lead for publication of the brochure should come under the direction of the Publication-Editorial Committee. Grant's motion (Dunn seconded) to have the Publication-Editorial Committee produce the brochure passed.

It was noted that this year's program has a dedicated time for Committees to discuss input (deadlines, dates, times, responsibilities, etc.) into the "Manual of Operating Procedures". With the split in the Secretary-Treasurer position, the Secretary will serve a two year term and three thereafter; the Treasurer will serve a three year term and three thereafter. This split was approved at the business meeting last year. The position of Editor was to be initially one year. The Historian will serve for a five year period, maintain lists of past officers and take pictures at the annual meeting.

A change in the TES dues was discussed. L. Greer commented that industry support should be greater and the membership committee was admonished to consider methods to recruit new members, especially among industry representatives.

President Yanes announced that a letter had been distributed to the membership announcing Dr. Caron's death and the appointment of Jerome Grant to the position of President-Elect (according to Article 9 Section 6). During the regular business meeting, the membership will vote to "elect" Grant to the position of President-Elect.

R. Patrick moved (G. Burgess seconded) that the meeting be adjourned. The motion passed.

Sessions of the Annual Meeting

The 1992 Annual Meeting of the Tennessee Entomological Society was called to order by President Jaime Yanes, Jr. at 1:00 P.M., October 8. Steve Murphree chaired Session I including five papers from 1:00 to 2:30 P.M. Reid Gerhardt chaired Session II including six papers from 2:45 to 4:15 P.M.

The T.E.S. Business Meeting was held on the morning of October 9, followed by Paper Session III, chaired by Bruce Kauffman including six papers.

Business Meeting
(8:15 A.M., October 9, 1993)

Dr. Jaime Yanes opened the meeting and asked that the minutes of the previous meeting be read. These were approved as read.

Old Business:

Program Committee - Jerome Grant, Chairperson

Jerome Grant presented the committee report. Seventeen papers were presented during the meeting. Doris Caldwell and Renee Chagnon were thanked for their assistance in preparing the program. Jerome Grant distributed a committee sign up sheet and requested members volunteer for assignments. The motion to accept the program committee report (Burgess/Hopkins) was passed.

Constitution committee - Joe Dunn, Chairperson

Joe Dunn presented a committee report. It was proposed last year at the business meeting that the position of Secretary-Treasurer be split and the position of Historian added. Joe Dunn moved the changes in the TES Constitution be accepted as printed in the Firefly. Russ Patrick seconded the motion. The motion passed. Joe Dunn also discussed the issue of incorporation of the Tennessee Entomological Society as a non-profit organization. As such, TES is prohibited from carrying on propaganda, influencing legislation or campaigning on behalf of a political candidate. A motion to accept the Incorporation report (Murphree/Vogt) passed.

Awards Committee - Steve Murphree, Chairperson

Steve Murphree presented the committee report.

Selection of the Howard Bruer Award for Outstanding Young Entomologist of the State goes to Jessica Taylor of Lincoln Co. She will receive a plaque and a press release will be sent to Fayetteville.

The winner of the Student Paper Competition was Deborah Landau. She was presented a check for $50.

Dr. Jaime Yanes, the out-going President was recognized for his leadership during the year. He will be presented a plaque at a later date.

The motion to accept the Awards Committee report (Gerhardt/Burgess) was passed.

Auditing Report - Carroll Southards, Chairperson

Gary Lentz (for Southards) reported that he and Russ Emerson examined the books and found everything in order. He commended Harvey Barton for his good work in the transition from the late Rich Caron to the present time. The motion to accept Auditing Report passed.

Membership Committee Report - Charles Watson, Chairperson

Charles Watson reported he mailed a flyer in September regarding the Society with the call for papers to 75 colleges and universities in the southeast. About 40 of these went to Tennessee and the remainder to surrounding states.

Watson reported that the brochure design was found by the board to be too expensive for the Society's resources. The Publications Committee will take over the brochure project and produce a less expensive brochure.

There are 15 new members and two corporate members including 8 new regular members and six student members. The motion (Gerhardt/Murphree) to accept the Membership Committee report passed.

Prediction/Evaluation Committee - Paris Lambdin, Chairperson

Five major reports were turned in and three additional were promised. The committee decided to conduct a survey of the counties to obtain a more comprehensive evaluation of insect problems statewide. A survey form will be developed and sent to the agents next year. The motion (Skinner/Murphree) to accept the report passed.

Publication and Editorial Committee - Gray Haun, Chairperson

Jerome Grant made the report for Gray Haun. The Firefly emblem on the cover was generated by a computer program and added to the quality of the publication which contained the proceedings of last years meeting. The Firefly and the program will be mailed to any active member unable to attend the meeting. The motion (Pless/Burgess) to accept the report passed.

Publicity Committee - Harry Williams, Chairperson

Harry Williams reported that the best publicity is the daily activity and contacts each one makes. The Society's second major publicity activity is the mailing of flyers and call for papers prior to the annual meeting. Direct mail to individuals attracts attention to the Society. The Publicity Committee will prepare a report of the meeting including the papers presented, awards made and mail this to newspapers and magazines. The motion (Gerhardt/Grant) to accept the report passed.

Local Arrangements Committee - Jim Bogard, Chairperson

Jim Bogard thanked the committee and others who helped make the arrangements. Motion (Pless/Burgess) to accept report passed.

Nominating Committee - Gene Burgess, Chairperson

Gene Burgess thanked the committee which served with him. This year we have two President-Elects. With the untimely death of Richard Caron, the board elected Jerome Grant to the position of President-Elect. By the Constitution, the person elected by the board must subsequently be elected by the Society. The motion (Burgess/Murphree) to elect Jerome Grant to be President-Elect 1991-92 passed. The motion to elect Russ Patrick President-Elect 1992-93 passed. The motion to elect Gray Haun as Editor passed. The motion to elect Harry Williams as Historian for a 5 year term passed. The committee nominated Donald Ourth and Alan Hopkins to the positions of Member-at-Large. The motion to elect them passed.

Necrology Committee:

Gary Lentz paid tribute to Dr. Richard Caron.

President Yanes polled the group on the time of the meeting in 1993. The second-third week of October was acceptable to the group. The location of Nashville was approved by the group. The Local Arrangements Committee will be looking at other hotel sites.

New Business:

Ad Hoc Committee:

G. Lentz discussed the appropriate means to recognize Dr. Caron. At the summer board meeting it was approved to rename the Outstanding Entomologist Award to the Richard E. Caron Outstanding Entomologist Award. Steve Murphree seconded the motion which subsequently passed.

The ad hoc committee also proposed presenting a framed parchment to Katrina Caron, expressing the appreciation of the Tennessee Entomological Society for the many contributions which Dr. Caron made. This motion also passed.

G. Burgess introduced a new staff member, Dr. Frank Hale, who is stationed in Nashville.

President Yanes expressed his gratitude for being able to serve TES. He then asked the Past Presidents of TES to escort President-Elect Grant to the podium. President Yanes passed the Presidential gavel to Jerome Grant.

President Grant solicited assistance for committee involvements. He thanked out-going President Yanes for his contributions and then adjourned the business meeting.

Board of Directors Meeting
(12:00 P.M., October 9, 1992)

President Grant convened the Board meeting at 12:00 noon following the TES meeting. The first item of business was to consider the committee assignments for this year. Most committees had two or more volunteers.

As directed by the Constitution, the Board must approve the new members. Seventeen new members were considered by the Board including two sustaining, ten regular and five student members. A motion (Grant/Yanes) to accept these new members was passed.

The meeting location was then discussed by the Board. Because of the noise of the railroad and poor dining service, the consensus was to locate to another hotel in the Nashville area.

President Grant reminded Past President Yanes of the customary task of sending letters of congratulations to student winners and thank you notes to the hotel management. Harry Williams is to provide Jaime Yanes the address of Jessica Taylor in Lincoln County.

The Board then considered the topic of having the annual informal banquet. Jerome Grant will ask Lee Greer to look for an outside restaurant where the group can dine.

Jaime Yanes raised the question of increasing the registration fee or dues as discussed at yesterday's Board meeting. President Grant reported he informally polled several members; most did not favor a dues increase. The need to emphasize the role of sustaining memberships was discussed. Most individuals are not aware of this membership category. It was pointed out that the registration board and registration forms need to be changed to include this category of membership.

Treasurer Barton reported that the bill from the hotel was $83.90 of which $48.72 was listed as miscellaneous (audio visual) and the remainder for refreshment breaks and tax. Jerome Grant reported he had some additional expenses related to the publication of the Firefly.

The process by which the Publication Editorial Committee would prepare the TES brochure was discussed. Gray Haun will obtain cost estimates and Jerome Grant will inform the Board between January and March 1993. The purpose of the brochure is to publicize the Tennessee Entomological Society. President Grant encouraged the Board members to comment directly on the prototype brochure.

There was considerable discussion on the targeted membership and conflicts with Tennessee Academy of Science. A more diverse program should be sought, including basic papers. Industry representatives should be actively recruited according to Jaime Yanes. The importance of recertification points for those attending the meeting was discussed. It would be necessary to prepare the program earlier.

President Grant indicated he will appoint an ad hoc committee to investigate incorporating the Tennessee Entomological Society. Joe Dunn will serve on the committee, but doesn't want to chair the committee.

New Business:

Future Board Meeting:

President Grant set the next TES Board Meeting at 10:00 a.m. on August 12, 1993 at the University of Tennessee District II Extension office in Nashville in the large conference room.

Grant emphasized we need to work hard with Publication-Editorial Committee and the Membership Committee this year to get the brochure printed up.

Jaime Yanes commented that in the final business meeting, the second to third week of October was determined to be the best time for the annual TES meeting. He suggested that Jim Bogard start looking at prospective locations during the winter months. If Lee Greer agrees to serve on the Local Arrangements Committee, now would be an opportune time to negotiate a meeting location. It was suggested the committee negotiate a "state rate" rather than $33/night (the current state rate) since the state rate may increase soon.

To improve the program and to increase outside interest, it was suggested that the program include an invited speaker. C. Youmans indicated he might be able to help support that effort. Industry support may be solicited to enhance the invited speaker portion of the program. Grant asked D. Ourth to serve on the Program Committee to help recruit the invited speaker.

President Grant adjourned the meeting.

TENNESSEE ENTOMOLOGICAL SOCIETY
Minutes of the Board of Directors Meeting
August 13, 1992

PRESENT: Jerome Grant, Lee Greer, Joe Dunn, Steve Murphree, Harvey Barton, Steve Powell, Jim Bogard, Gary Lentz.

Jerome Grant, acting on behalf of TES President Jaime Yanes, called the meeting to order (10:05 A.M., CDT) at the Extension Office at Ellington Plant Science Center in Nashville. He expressed thanks to those who made special efforts to attend.

The minutes of the November 1991 business meeting were reviewed. The August 10, 1991 minutes were not available for review. Jerome Grant requested anyone having a copy get that to him. Joe Dunn was to check his files for a copy of the minutes.

The following reports were presented:

Treasurer's Report: Harvey Barton reported he could find no bank in Jonesboro, AR which did not charge a service charge. He presented a financial report showing the original deposit of $3,284.39 to the Arkansas Bank in Jonesboro received from Rich Caron in December 1991, dues received and expenses. Harvey Barton indicated he had no canceled checks or other records. Gary Lentz agreed to check with First American National Bank in Jackson to determine the availability of copies of checks.

Nominating Committee - Gene Burgess (not present)

Burgess is making plans to contact committee members to solicit a list of nominees for the offices that will be open and will provide a list of nominees for the membership to vote on.

Publicity Committee - Harry Williams (not present)

He is planning to distribute information on the meeting as soon as the location is established.

Local Arrangements Committee - Jim Bogard

He distributed a copy of the contract with Ramada Inn (I-24 & Bell Road). The advantages of the 'informal banquet' were discussed. We can furnish our own slide projectors. The rooms will be available at the state rate.

Program Committee - Jerome Grant

Jaime Yanese indicated that the call for papers would be mailed to the embership within 10 days. The impact of the boll weevil eradication program on potential clientele was discussed. Jerome Grant will contact Dr. Jimmy Smith, Gerald McKibben and/or Bill McGovern about possible presentations at TES.

Membership Committee - Charles Watson (not present)

He reported he is preparing to mail out a membership solicitation and a circular on TES to approximately 45 academic institutions. A discussion ensued of methods to honor Dr. Richard Caron for his contributions to the Tennessee Entomological Society as Secretary-Treasurer and President-elect.

Auditing Committee - Carroll Southards (not present)

Gary Lentz, a committee member, indicated an audit will be conducted before the October 1992 meeting.

Constitution Committee - Joe Dunn

The constitution revision was passed by the membership and will be incorporated into the upcoming issue of the Firefly. Jerome Grant is to send a copy of it to Joe Dunn.

Prediction and Evaluation Committee - Paris Lambdin (not present)

The 1991 report was prepared by the October 1991 meeting and is ready for inclusion in the Firefly. Flyers are to be sent to the membership by the end of August requesting data on insect pests encountered in 1992. This request could be sent out with the call for papers. We need to encourage the membership to distribute this information to concerned individuals over the state. Past contributions by Bruce Kauffman and Mike Cooper were recognized.

Lee Greer suggested the meeting be videotaped and a VCR and monitor be made available to those who need it for presentations. The pros and cons of videotaping was discussed extensively. Jerome Grant will discuss this with Jaime Yanes.

Awards Committee - Steve Murphree

Guidelines and criteria for student paper competition were discussed. Reid Gerhardt was recommended as a source of information for the chairman.

Publications Editorial Committee - Gray Haun (not present)

The Firefly is on schedule. The minutes of the August 10, 1991 meeting are missing. All abstracts (except two) are submitted. The constitution will need to be examined by Joe Dunn and his committee to determine accuracy. Abstracts will be requested with the call for papers or submitted at paper presentation.

Membership Committee - Charles Watson (not present)

Charles Watson is discussing the brochure with a printer in Greenville, SC. The cost of the brochure is estimated to be $798/1000 copies, ca. $900/2000, and $1240/5000. The brochure would be black and white with color photographs. Charles will come to Knoxville in late August to visit with the staff on particulars of the brochure. Lee Greer suggested Tennessee Farmers Coop Publications Department might be of some assistance. Jerry Kirk is the editor at La Vergne and Lee Greer will talk with him.

Old Business -

1. Incorporation of the Society. Joe Dunn gave the papers to Bruce Kauffman or Jaime Yanes. Bruce will be asked to bring the papers to the next board meeting.

New Business -

1. Committee Responsibilities - The manual of operating procedures will help chairmen carry out their duties.

2. President Yanes sent a letter which he asked be distributed to the entire membership. The letter outlined changes in officers due to the death of Richard Caron. Jerome Grant will serve as President-elect and Gray Haun will serve as Editor and Chair of the Publication Editorial Committee. This letter could be sent out with the call for papers.

The next board meeting will be held at 10:30 A.M. on October 8, 1992 at the Ramada Inn.

The meeting was adjourned at 11:55.

Respectively submitted,

Gary L. Lentz
Secretary, T.E.S.

TENNESSEE ENTOMOLOGICAL SOCIETY

Treasurer's Report
8-24-1993

Books and records audited 10-8-92
Gary Lentz, Auditing Committee Chairperson

Balance on hand 10-8-92			$3318.87
Number of pins on hand 10-8-92	27		
Expenses (October 1992 Meeting)			
Ramada Inn Southeast (Student Meals)	$ 74.41		
Deborah Landau (Student Award)	$ 50.00		
Ramada Inn SE (Coffee and A/V equip.)	$ 83.90		
Firefly printing bill	$259.50		
Program printing bill	$ 27.00		
Charles Watson (Postage & envelopes)	$ 23.31		
TOTAL EXPENSES	**$518.12**		
Income (October 1992 Meeting)			
Dues		$ 215.00	
Registration		$ 645.00	
Sustaining Members		$ 100.00	
Pins (7)		$ 70.00	
TOTAL INCOME		**$1030.00**	
Net Income from October 1992 Meeting		**$ 511.88**	
Balance on hand 10-13-92			$3830.75
Pins on hand 10-13-92	20		
Expenses (10-13-92 thru 8-24-93)			
Bank service charge	$ 32.00	(Note: Bank suspended service charges effective 6-1-93)	
Russ Patrick (Postage)	$ 52.00		
TOTAL EXPENSES	**$ 84.00**		
Income (10-13-92 thru 8-24-93)			
Student Dues (2)		$ 2.00	
Regular Dues (2)		$ 10.00	
Pins (1)		$ 10.00	
TOTAL INCOME		**$ 22.00**	
Balance on hand (8-24-1993)			$3768.75
Number of pins on hand (8-24-1993)	19		

Submitted 8-24-1993 Harvey Barton, Treasurer

ATTENDANCE ROSTER OF THE 1992 ANNUAL MEETING OF THE TENNESSEE ENTOMOLOGICAL SOCIETY

MEMBER	AFFILIATION	LOCATION
	Regular Members	
Bancroft, Harold E.	Memphis State Univ.	Memphis, TN
Barton, Harvey E.	Arkansas State Univ.	Jonesboro, AR
Bogard, James B.	TN Dept. Agri.	Nashville, TN
Bolin, Ronald E.	TN Dept. Agri.	McMinnville, TN
Burgess, E. E. (Gene)	Univ. of TN	Knoxville, TN
Cagle, Jimmy	TN Dept. Agri.	Winchester, TN
Cate, Randy H.	Univ. TN Martin	Martin, TN
Chaudhary, Hans R.	TN Dept. Agri.	Harriman, TN
Cole, Bruce A.	TN Dept. Agri	McMinnville, TN
Eisler, Jim	TN Dept. Agri.	McMinnville, TN
Emerson, Rich	TN Dept. Agri.	Jackson, TN
Gerhardt, Reid R.	Univ. of TN	Knoxville, TN
Grant, Jerome F.	Univ. of TN	Knoxville, TN
Hale, Frank A.	Univ. TN Ag. Ext. Ser.	Nashville, TN
Harp, George L.	AR State Univ.	Jonesboro, AR
Harp, Phoebe A.	AR State Univ.	Jonesboro, AR
Haun, Walker G. (Gray)	TN Dept. Agri.	Louisville, TN
Heery, Frank	TN Dept. Agri.	Harrison, TN
Hopkins, Alan	Miles, Inc.	Little Rock, AR
Kauffman, Bruce	TN Dept. Ag. (Forestry)	Nashville, TN
Keener, Jim	TN Dept. Agri.	Maryville, TN
Kollars, Tom	Memphis State Univ.	Memphis, TN
Lambdin, Paris L.	Univ. of TN	Rockford, TN
Latson, Larry N.	David Lipscomb Univ.	Nashville, TN
Lentz, Gary L.	Univ. of TN	Jackson, TN
Mahendra Mahabro	Woodward Clyde Consult.	Franklin, TN
Miller, Richard	TN Dept. Agri.	Jackson, TN
Murphree, Steven C.	Belmont Univ.	Nashville, TN
Orr, James L.	Van Waters & Rogers	Chattanooga, TN
Ourth, Donald D.	Memphis State Univ.	Memphis, TN
Patrick, Russ	Univ. of TN	Jackson, TN
Pendergrass, Jimmy	Cheminova	Collierville,TN
Pless, Charles D.	Univ. of TN	Knoxville, TN
Powell, Steve	TN Dept. Agri.	Nashville, TN
Self, Anni	TN Dept. Agri	Nashville, TN
Shamiyeh, N. B.	Univ. of TN	Knoxville, TN
Skinner, John	Univ. of TN	Knoxville, TN
Watson, Charles N., Jr.	Clemson Univ.	Clemson, SC
Weldon, Steve	Van Waters & Rogers	Birmingham, AL
Williams, Harry E.	Univ. of TN	Knoxville, TN
Woodiel, Neil L.	Woodiel's Consulting	McMinnville, TN

MEMBER	AFFILIATION	LOCATION
	Student Members	
Dellinger, Theresa	Univ. of TN	Knoxville, TN
Gray, Melinda	Univ. of TN	Knoxville, TN
Harmuth, John	Univ. of TN	Knoxville, TN
Holt, Lee	Univ. of TN	Seymour, TN
Hughes, David N.	Univ. of TN	Knoxville, TN
Landau, Deborah	Univ. of TN	Knoxville, TN
Lockey, Timothy	Memphis State Univ.	Memphis, TN
Stanton, Chris R.	Univ. of TN	Louisville, TN
Traore, Sitan	Univ. of TN	Knoxville, TN
Vogt, James T.	Univ. of TN	Knoxville, TN
	Sustaining/Corporate Members	
Greer, Lee	Valent	Dunlap. TN
Miles, Inc.	Agricultural Division	Memphis, TN
Yanes, Jaime	American Cyanamid	Wayne, NJ
Youmans, Clete	American Cyanamid	Dyersburg, TN

BOARD OF DIRECTORS

President - Jaime Yanes, Jr.
Past President - Bruce Kauffman
President Elect - Jerome Grant
Secretary/Treasurer - Gary Lentz
Editor - Gray Haun
Historian - Russ Patrick
Member at Large - Lee Greer
Member at Large - Steve Powell

1991 - 1992
COMMITTEES

NOMINATING
Gene Burgess - Chair
Bill Shamiyeh
Jerome Grant
Bruce Kauffman
Joe Dunn

MEMBERSHIP
Charles Watson, Jr. - Chair
Hans Chaudhary
John Rochelle
Alan Hopkins
Lee Greer
David Hughes

AWARDS
Steve Murphree - Chair
Gene Burgess
Bill Shamiyeh
Reid Gerhardt
Anni Self
Harry Williams

CONSTITUTION
Joe Dunn - Chair
Carroll Southards
Charles Pless

PUBLICITY
Harry Williams - Chair
Steve Powell
M.E. Snodgrass
J.T. Vogt
Lee Greer

AUDITING
Caroll Southards - Chair
Rich Emerson
Gary Lentz

PREDICTION/EVALUATION
Paris Lambdin, Chair
Gene Burgess
Bill Shamiyeh
Jimmy Cagle
Gray Haun
John Rochelle
Jim Keener

PUBLICATION/EDITORIAL
Gray Haun - Chair
Jerome Grant
Lynn Snodderly
Paris Lambdin
Gary Lentz

PROGRAM
Jerome Grant - Chair
Jaime Yanes, Jr.
Elizabeth Vail
Bruce Kauffman

LOCAL ARRANGEMENTS
Jim Bogard - Chair
John Rochelle
Jim Keener
Steve Powell
Lee Greer
Frank Heery

Tennessee Entomological Society

Prediction and Evaluation

Committee Report

October 8, 1992

Paris L. Lambdin - Chairman
Committee Members:
Gene Burgess
Bill Shamiyeh
Jimmy Cagle
Gray Haun
John Rochelle
Jim Keener

Insect pests continue to have a significant affect on agricultural production in Tennessee. We are grateful to those individuals who have submitted the following reports on the major crop pests for 1992. Observations on these crop pests are as follows:

Insect Problems in Field and Vegetable Crops and Ornamental Trees

Bill Shamiyeh
University of Tennessee

WHEAT: Cereal leaf beetle infestation levels were moderate in Robertson County averaging 1.5 larvae/stem. Aphid populations were light.

ALFALFA: Alfalfa weevil larva counts were low in plots in Springfield averaging 4.4 larvae/ sweep and moderate in Spring Hill averaging 10.2 larvae/sweep.

FIELD CORN: European corn borer infestation levels were 22% at Highland Rim and 18% at Greeneville. Fall armyworm populations were very heavy in Middle and East Tennessee with infestation levels approaching 73% .

TOBACCO: Tobacco aphid population densities of the red form were high in Middle and East Tennessee with the development of sooty mold fungus. At Greeneville, aphid populations were moderate requiring only one insecticide application. Flea beetle populations reached threshold densities during the growing season at both locations. Budworms and hornworms: populations were light on both burley and dark tobacco.

SNAP BEANS: Mexican bean beetles were represented by very low population densities early in the season becoming heavier in late July and early August. European corn borer population densities were light during the growing season.

BROCCOLI: Pre-treatment counts of worm complex at Crossville averaged 2.5 worms/plant. Equal populations of the imported cabbageworm, cross-striped cabbageworm and the cabbage looper were present.

SWEET CORN: Corn earworm populations at Crossville were very heavy averaging 1.5 worms/ infested ear.

ORNAMENTAL TREES and Shrubs: Japanese beetle populations were very heavy at Crossville with about 75% defoliation of apple trees and grape vines. Beetles were also heavy on Crab apples and Purple leaf plums. Two-spotted spider mite populations were very heavy on apple trees late in the season averaging about 200 mites/ leaf. One miticide application was sufficient.

Comments on Mite Problems in Honey Bee Colonies

John Skinner
University of Tennessee

BEE HIVES: Tracheal mites (TM) and Varroa mites (VM) have continued to cause serious widespread loss (50%) of honey bee colonies throughout Tennessee. Beekeepers are treating TM infested colonies with menthol and shortening/sugar patties while VM infested colonies are treated with Apistan strips. Fluctuating temperatures are believed related to variation in efficacy of menthol because this fumigant is only effective above 60 degrees. We are certain the reduction in the number of bee colonies has reduced pollination of several fruits and vegetables however, since many factors influence yield we cannot place an exact "dollar" figure on the suspected loss in yield.

Status of Head Weevil Releases for Musk Thistle Control

Paris L. Lambdin and Jerome Grant
University of Tennessee

REDISTRIBUTION OF HEAD WEEVILS: Approximately 10,000 head weevils were collected from the field reservoir sites and released at about 75 sites in eastern and middle Tennessee for suppression of musk thistle. These sites were identified and located with the cooperation of Tennessee Department of Transportation and County Extension Agents. Most release sites were located in right-of-ways and fields along the interstate and state highway system. Weevils were released (ca. 100 per site) at 3-5 sites, in most instances, into each of 13 new counties. Additional releases were made in eight counties where weevils had been released previously. Approximately 100 head weevils were released on yellow thistle in Hardeman County (western Tennessee). No musk thistle plants were found in this county.

Present and Future Concerns

Harry WIlliams
University of Tennessee

IMPORTED FIRE ANTS, *Solenopsis invicta* and *S. richteri*, are being detected in all areas of Tennessee. The ants are now well established in 10 or more counties. This problem will continue in the future. Japanese beetles invaded East Tennessee in 1936 and are moving westward. This pest, *Papilla japonica*, will become established statewide in the 1990s. Heavy populations were present in east Tennessee in 1992 where this pest has the capability of damaging over 100 plant species. Black vine weevils (*Otiorhymchus* = *Brachyrhimus sulcatus*) are established in Tennessee nursery plantings. Japanese weevil (*Pseudocmeorhimus bifasciatus*) are being detected in landscape and nursery plantings.

FOREST INSECT SUMMARY 1992

Bruce Kauffman
Tennessee Department of Agriculture

INSECT	HOST	LOCATION	REMARKS
Ailanthus webworm *Atteva punctella*	Ailanthus	Central Tennessee	Light to moderate defoliation in Overton County.
Aphids Several species	Sugar maple, Virginia pine, yellow poplar	Statewide	Free feeding on leaves and needles causing heavy sugar secretions in scattered forest and urban locations (P. Moditz, G. Zimmerman, TDF).
Aphid leaf galls Several species	Elm, poplar	Central Tennessee	Causing leaf distortions on scattered urban trees in Davidson County (A. Self, TDA).
Bagworms *Thyridopteryx ephemeraeformis*	Bald cypress, red cedar, spruce, white pine, evergreen ornamentals	Central Tennessee	Some locations report increasing defoliation damage (J.Dale, T. Shires, J. Woodcock, TDF).
Beech blight aphid *Faqiphaqus imbricator*	Beech	Eastern Tennessee	Infesting branches with clusters of aphids covered with whitish wax in scattered areas in Cocke and Union Counties.
Black turpentine beetle *Dendroctonus terebrans*	Loblolly and shortleaf pine	Southwestern Tennessee	Some isolated reports of mortality occurred in Chester, Hardeman and McNairy Counties (P. Moditz, R. Ward, TDF).
Buck moth *Hemileuca maia*	Oak and hickory	Central Tennessee	Light defoliation (less 10%) in Wayne County (J. Kirksey).
Clearwinged borers *Synanthedon* spp. and other genera	Ash, dogwood, maple, peach, viburnum	Statewide	Trunk damage to trees in scattered locations in Davidson, Franklin and Sullivan Counties (J. Cagle, TDA; S. Bingham, TDF).
Boxelder bug *Leptocorcis trivittatus*	Boxelder, goldenrain tree	Eastern and Central Tennessee	Populations remained low for the second growing season in a row.
Carpenter ants *Camponotus* spp.	Various hardwoods	Central Tennessee	Infesting the wood in cavities of yard trees in Davidson and Putnam Counties (G. Zimmerman, TDF).
Catalpa worm *Ceratomia catalpae*	Catalpa	Statewide	Both generations of this caterpillar commonly defoliated trees less than 50 percent (R. Thompson, TDF).

INSECT	HOST	LOCATION	REMARKS
Cherry webspinning sawfly *Neurotoma fasciata*	Black cherry	Central Tennessee	Lightly defoliated cherry in Coffee County.
Chestnut weevils *Curculio* spp.	Chinese chestnut	Eastern Tennessee	Infesting a high percentage of nuts in local orchard in Roane County (B. Miller, TDF).
Cottony maple leaf scale *Pulvinaria acericola*	Silver maple	Central Tennessee	Infesting leaves in Giles County (T. Shires, TDF).
Cutworms Several species	Loblolly pine	Western Tennessee	Killing one percent of newly emerging seedlings in Madison County (M. Sherrill, TDF).
Cutworms *Phoberia atomaris* and other species	Oaks and hickories	Central Tennessee; Cumberland Plateau	Light to moderate (less 50 percent) defoliation in scattered locations in Cheatham, Cumberland, Dickson, Fentress, Houston, Humphreys, Rhea and Wayne Counties (J. Gregory, TWRA; J.Kirksey, B. Swafford, J. Woodcock, TDF).
Eastern subterranean termite *Reticulitermes flavipes*	Conifers, hardwoods	Central Tennessee	Infested the wood of standing redbud, sugar maple, and yellow poplar in Davidson County.
Eastern tent caterpillar *Malacosoma americanum*	Black cherry	Central and Eastern Tennessee and McNairy County	A few locations in central Tennessee with heavy defoliation but more commonly with widespread light defoliation. General population decline from 1991 (D. Arnold, T. Melton, P. Moditz, S. Roark, J. Woodcock, TDF).
Elongate hemlock scale *Fiorinia externa*	Eastern hemlock	Eastern Tennessee	*Caused large yellow needle blotches in Sullivan County (S. Bingham, TDF).*
European hornet *Vespa crabro germana*	Various hardwoods and shrubbery	Central Tennessee	Damage to lower trunk areas by gathering inner bark for nest building in Giles County (T. Shires, TDF).

INSECT	HOST	LOCATION	REMARKS
Fall cankerworm *Alsophila pometaria*	Oak	Eastern Tennessee	Heavy defoliation of a 50 acre Sullivan County oak stand (S. Bingham, TDF).
Fall webworm *Hyphantria cunea*	Various hardwoods especially persimmon, sourwood	Statewide	Widespread light defoliation. Orange-headed and blackheaded races defoliating trees in central and eastern Tennessee. Orange-headed race present in western Tennessee (T. Melton, J. Woodcock, TDF).
Forest tent caterpillar *Malacosoma disstria*	Sugar maple	Central Tennessee	Light defoliation in scattered locations in Davidson County.
Giant bark aphid *Lonqistiqma caryae*	Pin oak	Western Tennessee	Infesting the trunks of newly planted pin oaks in Madison County.
Gypsy moth *Lymantria dispar*	Hardwoods	Statewide	Moths trapped in 19 counties with 2 new county records (Benton, McNairy). Rhea/ Bledsoe County infestation treated (3,000 acres).
Hackberry butterfly *Asterocampa celtis*	Hackberry	Central Tennessee	Heavy defoliation of 2000 trees in Bedford, Lincoln, and Marshall Counties (T. Hall, TDF).
Hickory bark beetle *Scolytus quadrispinosus*	Hickory	Central Tennessee	Low population levels associated with decline symptoms.
Hickory twig girdler *Oncideres cinqulata*	Hickory, pecan, persimmon	Central Tennessee	Fallen twigs present in Humphreys and Marion Counties.
Imperial moth *Eacles imperialis*	Various conifers, hardwood	Central Tennessee	Light defoliation of plum in Robertson County (T. Melton, TDF).
Io moth *Automeris io*	Various hardwoods	Eastern Tennessee	Light defoliation of ash in Sullivan County (S. Bingham, TDF).
Inchworms Several species	Dogwood, hickory, oak	Central Tennessee; Cumberland Plateau	Light to moderate defoliation present in scattered locations in Cheatham, Claiborne, Cocke, Cumberland, Dickson, Fentress, Houston, Humphreys, Rhea, Union, and Wayne Counties (J. Gregory, TWRA; J. Kirksey, B. Swafford, J. Woodcock, TDF).

INSECT	HOST	LOCATION	REMARKS
Japanese beetle *Popillia japonica*	Fruit trees, sassafras, sycamore	Eastern Tennessee; Cumberland Plateau	Some heavy defoliation of sassafras and sycamore in Claiborne, Putnam, and Union Counties (D. Arnold, J. Dale, S. Roark, TDF).
Green June beetle *Cotinis nitida*	Oak, sycamore	Central Tennessee	Light to moderate defoliation of scattered individual trees.
Lady beetles Several species	Aphids scales on pines and hardwoods	Central and Eastern Tennessee	Large populations of adults entered homes in the fall in scattered locations in Bradley and Hickman Counties (S. Johnson, TDF).
Leaf rollers Several species	Hickory, oak	Central Tennessee	Light to moderate defoliation present in scattered locations in Cheatham, Dickson, Houston, Humphreys, Wayne Counties (J. Gregory, TWRA; J. Kirksey, J. Woodcock, TDF).
Locust leafminer *Odontota dorsalis*	Black locust	Eastern and Central Tennessee	Widespread with some areas of heavy defoliation (T. Melton, R. Van Inwegen, TDF).
Loblolly pine sawfly *Neodiprion taedae linearis*	Loblolly pine	Central and Western Tennessee and Bradley County	More widespread defoliation (some heavy) experienced in scattered locations in urban plantings and low acre plantings in Hardin and Weakley Counties (J. Kirksey, J. Replogle, T. Shires, T. Hall, J. McCarty, T. Tynes, G. Zimmerman, TDF).
Maple petiole borer *Caulocampus acericaulis*	Sugar maple	Central Tennessee	Noticeable leaf drop in Dickson, Houston, Humphreys, Maury Counties (D. Walters, J. Woodcock, TDF).
Midge leaf galls Several species	Ash, baldcypress, oak	Central and Western Tennessee	Distorting leaves and needles on scattered trees (R. Stutts, TDF).
Mimosa webworm *Homadaula anisocentra*	Honey locust, mimosa	Statewide	Most locations had defoliation under 50 percent.

INSECT	HOST	LOCATION	REMARKS
Mite leaf galls *Vasates* spp.	Hardwoods	Central and Western Tennessee	Maple leaves deformed in western Davidson and Weakley Counties (S. Stutts, TDF).
Mosquitoes Several species	Man	Eastern Tennessee	Late summer populations increased in scattered locations in wooded habitats.
Nantucket pine tip moth *Rhyacionia frustrana*	Loblolly pine, Virginia pine	Statewide	Damage generally reduced from 1991 in urban areas, however, damage was severe in two young plantations in Rhea and Scott Counties (J. Littrell, S. Malone. BSPC; S. Brabec, J. Melton, C. Strohmeier, R. Ward, TDF).
Oak phylloxerids *Phylloxera* spp.	Nuttall oak	Western Tennessee	Leaves of oaks on 200 acres were infested in Dyer County causing leaf distortions (S. Brabec, TDF).
Orangestriped oakworm *Anisota senatoria*	Pin oak	Central Tennessee	Some urban trees in scattered locations totally defoliated in Davidson County.
Pales weevil *Hylobius pales*	Loblolly pine	Cumberland Plateau	Mortality at 20 seedlings per acre over 110 acres in Scott County (J. Littrell, BSPC).
Pecan weevil *Curculio caryae*	Pecan	Central Tennessee	Damage to nut crop in Davidson County.
Pecan phylloxerids *Phylloxera* spp.	Hickory, pecan	Central and Western Tennessee	Increased damage to leaves and shoots of pecan in western Tennessee (L. Brown, K. Kilmer, R. Stutts, T. Tynes, T. Shires, G. Zimmerman, TDF).
Pine bark adelgid *Pineus strobi*	White pine	Statewide	Infested trunk and branches with whitish, waxy covering (B. McCrary, T. Melton, S. Roark, R. Stutts, B. Swafford, G. Zimmerman, TDF).
Pine engraver beetles *Ips avulsus* *Ips grandicollis* *Ips calliqraphus*	Southern pines, white pines	Southeastern and southwestern Tennessee; northern Cumberland Plateau	Infestations up to 50 trees following the summer drought conditions in the southwest in 1991 (S. Brabec, J. Kirksey. P. Moditz, C. Strohmeier, B. Swafford, R. Ward, TDF).

Pine spittlebug *Aphrophora parallela*	Southern pines; white pine	Central and Eastern Tennessee	High population levels were present on the Cumberland Plateau.
Pitch mass borer *Synanthedon pini*	White pine	Central Tennessee	Damaged shoots of yard tree (J. Kirksey, TDF).
Powderpost beetles Several species	Conifer species	Central Tennessee	Infested structural timbers of homes (G. Eaton, TDF).
Psocids Several species	Hackberry, redbud	Central Tennessee	Covered the outer bark surfaces with webs in Wilson County (G. Eaton, TDF).
Psyllids *Pachypsylla* spp.	Hackberry	Central Tennessee	Distorted the leaves with galls in Smith County (J. Replogle, TDF).
Red-headed pine sawfly *Neodiprion lecontei*	Southern pines, white pine, Japanese black pine, Mugo pine	Statewide	Both urban and forest trees defoliated at increasing levels (D. Arnold, B. Miller, R. Stutts, R. Ward, G. Zimmerman, TDF; J. Littrell, BSPC).
Saddleback caterpillar *Sibine stimulea*	Various hardwoods	Eastern Tennessee	Lightly defoliated ash leaves in Sullivan County (S. Bingham, M. Miller, TDF).
Seedbugs *Tetyra bipunctuata; Leptoqlossus corculus*	Southern pine cones, white pine cones	Eastern and Western Tennessee	Damaged over 180 pounds of seed in TDF orchards (R. Cox, TDF).
Seed weevils Several species	Ash	Western Tennessee	Infested seed collected in Haywood County (M. Stanley, TDF).
Spring cankerworm *Paleacrita vernata*	Hackberry, hickory, oaks	Central Tennessee	Generally light defoliation (J. Gregory, TWRA; J. Kirksey, J. Woodcock, TDF).
Southern pine beetle *Dendroctonus frontalis*	Southern pines	Eastern and western Tennessee	Epidemic populations existed in the mountains of Sevier County. Lower level infestations were present in 6 other counties (T. Hudlow, J. McCarty, B. Miller, F. Swatzell, R. Thompson, R. Ward, M. Williams, TDF).
Sycamore lace bug *Corythucha ciliata*	Sycamore	Southeastern Tennessee	Noticeably yellowing leaves due to sap feeding in Hamilton and Marion Counties.
Thrips Several species	Various Hardwoods	Central Tennessee	Causing irregular leaf holes in early spring on cherry.

Treehoppers Several species	Hardwoods	Central Tennessee	Damaged dogwood twigs in commercial nursery (J. Cagle, TDA).
Tussock moths Several species	Various hardwoods	Eastern and Central Tennessee	Lightly defoliated white oak and chestnut. Fall population numbers seem reduced in comparison to 1991.
Walkingstick *Diapheromera femorata*	Hardwoods	Central Tennessee	Heavy populations on black oak in Maury County. Reduced populations in Fentress and Pickett Counties since 1991 (B. Conatser, S. Johnson, TDF).
Walnut husk fly *Rhagoletis completa* *R. suavis*	Black walnut	Central Tennessee	Some nut crops infested in Davidson County.
White pine aphid *Cinara strobi*	White pine	Central Tennessee	Infested trunk and branches of Christmas and yard trees (T. Shires, TDF).
White pine cone beetle *Conophthorus coniperida*	White pine	Eastern Tennessee	Destroyed 40 pounds of seed in TDF orchards (R. Cox, TDF).
White pine weevil *Pissodes strobi*	White pine	Cumberland Plateau; Eastern Tennessee	Scattered trees with shoots infested in Campbell, Cumberland, Fentress, Johnson, and Sevier County (B. Swafford, R. Walker, M. Williams, TDF).
Xylosandrus twig and trunk borer *Xylosandrus* spp.	Hardwoods especially black walnut	Central and Eastern Tennessee	Increased incidence of this introduced ambrosia beetle. It sometimes was found in association with Fusarium canker in a black walnut plantation (M. Miller, D. Walters, TDF).
Yellow poplar weevil *Odontapus calceatus*	Magnolia, yellow poplar	Central and Eastern Tennessee	Scattered areas of light to moderate leaf damage (holes and defoliation) occurred. First damage reported in Davidson and Rutherford Counties (D. Arnold, B. Miller, S. Roark, B. Swafford, R. Walker, G. Zimmerman, TDF).

SOUTHERN PINE BEETLE

In the mountains of Sevier County, the SOUTHERN PINE BEETLE populations began building in the fall and winter of 1991 and reached epidemic levels in 1992. Activity was heaviest from east of Townsend in Blount County to Gatlinburg in Sevier County.

Statewide the number of southern pine spots began to climb after the lowest levels in 6 years (4 spots) were reached in 1991. Other counties reporting activity included Chester, Cocke, Hamilton, Rhea, and Roane.

COUNTY	# SPOTS
Blount	35
Chester	1
Cocke	44
Hamilton	1
Rhea	7
Roane	11
Sevier	294
TOTAL	392

GYPSY MOTH

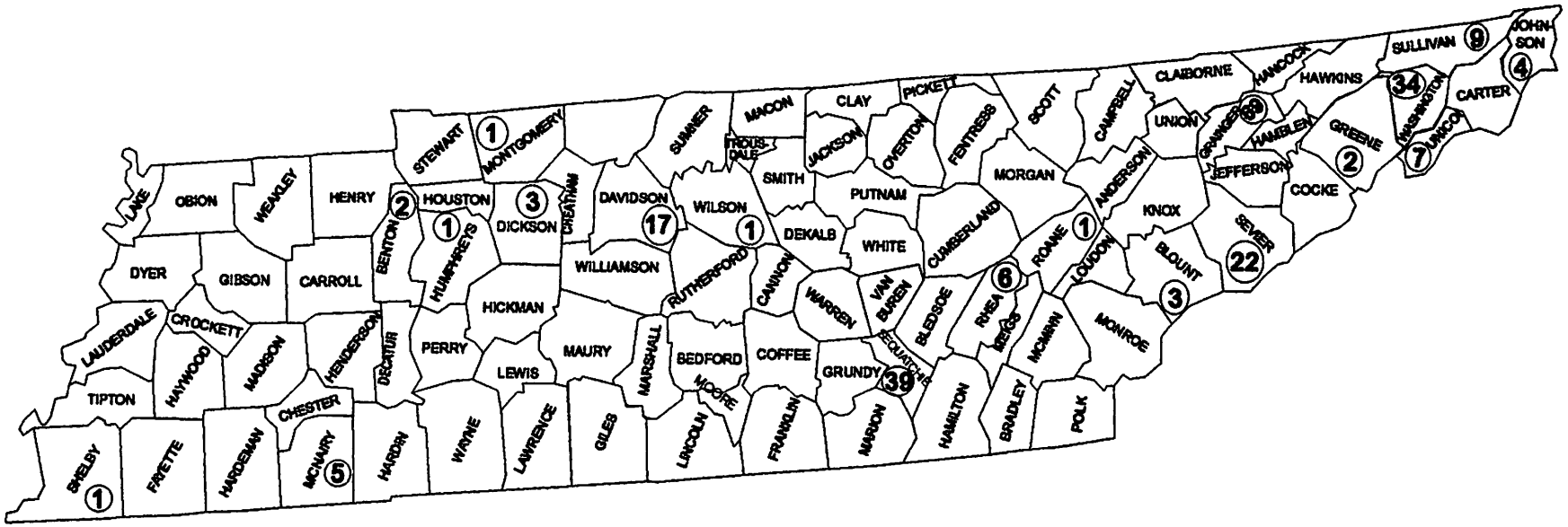
Approximately 3,000 acres were treated twice aerially in Rhea County and adjoining Bledsoe County for the GYPSY MOTH in May, 1992. After trapping, only six moths were caught - a 99 percent population reduction over 1991.

A total of 227 moths were caught in 19 counties. This represents an 82 percent decrease over the number of moth catches in 1991 (1287 moths) due primarily to the success of the Rhea/Bledsoe County treatment. Two new counties in western Tennessee (Benton and McNairy) trapped gypsy moths for the first time.

After an initial treatment in 1990 in Sequatchie County, 39 moths were trapped and three egg masses were removed in 1992. In addition, 37 moths were caught in northern Washington County and adjoining Sullivan County, and one egg mass was discovered. Aerial spray projects are proposed for these areas in May, 1993.

Four additional sites in Davidson, Grainger, McNairy, and Unicoi Counties will require delimiting trapping to determine if an infestation exists. Egg mass surveys for Grainger and Unicoi Counties were negative while surveys in areas of Davidson and McNairy Counties have yet to be conducted.

1992 TENNESSEE GYPSY MOTH SURVEY
Number of Moths Caught By County



Traps with Multiple Catches

Davidson - 4	Washington - 4	Unicoi - 7
Grainger - 8	Sevier - 3	Rhea - 1
Johnson - 1	Sullivan - 3	McNairy - 2

Known Infestations

Grainger	Rhea
Washington	Sequatchie

HARDWOOD DEFOLIATORS

High levels of defoliation of hardwoods occurred due to FALL CANKERWORM in one +northeastern location. Defoliation due to the BUCK MOTH, CUTWORMS, LEAF ROLLERS, and INCHWORMS was reduced to less than 50 percent in west central portion of the state. EASTERN TENT CATERPILLARS on black cherry had a few areas of heavy defoliation in the counties surrounding Nashville, but a general population decline was evident elsewhere.- An increase of the HACKBERRY BUTTERFLY population resulted in heavy defoliation of 2000 trees in three central Tennessee counties. Scattered areas of light to moderate defoliation of yellow poplar occurred in central and eastern Tennessee due to the YELLOW POPLAR WEEVIL.

PINE DEFOLIATORS

More widespread defoliation by the LOBLOLLY PINE SAWFLY was encountered in scattered locations of loblolly pine primarily in central and western Tennessee. Some forest and urban plantings were heavily defoliated. An upsurge of the REDHEADED PINE SAWFLY populations defoliated pine plantations at increasing levels in scattered locations statewide.

HISTORICAL NOTES

Presidents of the Tennessee
Entomological Society (1973 - Present)

President	Term	Affiliation
Mendell Snodgrass	'73 - '74	USDA
Omar Smith	'74 - '75	Memphis State University
Don Clements	'75 - '76	Cook's Pest Control
Gary Lentz	'76 - '77	University of Tennessee
Chester Gordon	'77 - '78	Tenn. Dept. of Agriculture.
Gene Burgess	'78 - '79	University of Tennessee
Reid Gerhardt	'79 - '80	University of Tennessee
Harold Bancroft	'80 - '81	Memphis State University
Joe Dunn	'81 - '82	American Cyanamid Company
Bill Van 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
Jaime Yanes, Jr.	'91 - '92	American Cyanamid Company

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

Secretary-Treasurer	Term	Affiliation
Jimmy White	'73 - '76	Tenn. Dept. of Agriculture
Harold Bancroft	'76 - '79	Memphis State University
Lyle Klostermeyer	'79 - '82	University of Tennessee
Bill Shamiyeh	'82 - '85	University of Tennessee
Richard Caron	'85 - '88	University. of Tennessee
Richard Caron	'88 - '91	University of Tennessee

Secretary of the Tennessee Entomological Society

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

Treasurer of the Tennessee Entomological Society

Treasurer	Term	Affiliation
Harvey Barton	'91 - '94	Arkansas State University

Editor of the Tennessee Entomological Society

Editor	Term	Affiliation
Jerome Grant/ Gray Haun	'91 - '92	University of Tennessee / TDA
Gray Haun	'92 - '95	Tenn. Dept. of Agriculture

Board of Directors
Members at Large

Member	Term	Affiliation
Gary Lentz	'87 - '88	University of Tennessee
Blake Bevill	'87 - '88	Arkansas State University
Michael E. Cooper	'88 - '89	Tenn. 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	Tenn. Dept. of Agriculture
Steve Powell	'91 - '92	Tenn. Dept. of Agriculture

Historians of the Tennessee Entomological Society (1973 - Present)

Historian	Term	Affiliation
Charles Pless	'73 - '76	Univ. of Tennessee
Herb Morgan	'76 - '79	USDA
Mendell Snodgrass	'79 - '82	USDA
Russ Patrick	'82 - '87	Univ. of Tennessee
Russ Patrick	'87 - '92	Univ. of Tennessee
Harry Williams	'92 - '97	University of Tennessee

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

Honorary Member	Year	Affiliation
Myron Smith	1982	Hill-Smith Pest Control
Jimmy White	1982	Tenn. Dept. of Agric.
Howard Bruer	1983	Tenn. Dept. of Agric.
Mendell Snodgrass	1983	USDA
Carl Brown	1985	Memphis State
Myrtice Snodgrass	1985	Knoxville, TN
John A. Hammett	1987	Tenn. Dept. of Agric.
Joe C. Dunn	1990	American Cyanamid

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

Recipient	Year	Location
Whitney Eckler	1975	Memphis, TN
Joe Martin	1976	Bolivar, TN
Bryan Peters	1977	College Grove, TN
Tidus Pollard	1978	Huron, TN
John Bentley	1979	??
Melissa Hart	1980	Watertown, TN
Gary Miller	1981	Knoxville, TN
Harold Glass	1982	Knoxville, TN
-----	1983	(No award given)
-----	1984	(No award given)
Penny Thompson	1985	Davidson County
Matthew Fumich	1986	Munford, TN
Christie Greer	1987	Greene Co.
Dottie Hodges	1988	Hamblen Co.
-----	1989	(No award given)
Tim Gentry	1990	Woodbury, TN
Jennifer Hartsell	1991	Hamblen Co.
Jessica Taylor	1992	Lincoln Co

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

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

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

Recipient	Year	Location
Jay Avery	1986	Knoxville, TN
Laura Rogers	1987	Knoxville, TN
Jason Oliver	1988	Knoxville, TN
Steve D. Powell	1989	Knoxville, TN
Robert C. Brown	1990	Knoxville, TN
Donald L. Sudbrink, Jr.	1991	Knoxville, TN
Deborah Landau	1992	Knoxville, TN

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

Article 1. Name

This Society is formed in the name and style of the "Tennessee Entomological Society", as an educational institution, not contemplating financial gain or profit. It is herein and after called the Society.

Article 2. Purpose

The purpose and object of the Society is to foster entomological accomplishment among its members and to promote the welfare of all of the State of Tennessee through the encouragement of: (1) the preparation, reading, and/or publication of papers,
(2) association and free discussion among all members, (3) the dissemination of entomological information to the general public, and (4) cooperative efforts in statewide insect surveys.

Article 3. Membership

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

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

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

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

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

Section 6. Procedure to Obtain Membership: Any person desiring to become a member of the Society shall do so by application and payment of dues to the Treasurer. After approval of the majority of the Board of Directors, said applicant shall become a duly constituted member.

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

Article 4. Membership Rights

Section 1. Voting: Each member in good standing shall be entitled to one vote at any regular or special meeting or by mail. Voting by proxy shall not be allowed.

Section 2. Privileges: All members in good standing shall have equal privileges in the presentation of papers and discussions at meetings.

Article 5. Membership Certificates

Section 1. Certificates: The Board of Directors shall decide upon what evidence of membership each member in good standing shall be entitled to receive.

Section 2. Transfer: Evidence of membership in the Society will not be transferable or assignable.

Article 6. Dues

Section 1. Annual Dues: The amount of the annual dues for membership in the Society will be established by the Board of Directors from time to time. The use or uses of dues collected shall also be determined by the Board.

Section 2. Time of Payment: The Board of Directors shall set such times during each year as it deems advisable for the payment of annual dues by members. Generally, annual dues shall be paid during registration at the annual meetings. However, a member may mail dues to the Treasurer of the Society if the member cannot attend a given annual meeting. If a member fails to pay dues two (2) years in a row, such member shall be dropped from the rolls.

Section 3. Honorary Members: There shall be no dues required for Honorary Members or others specially designated by the Board of Directors.

Article 7. Meetings of the Society

Section 1. Annual Meetings: The Society shall hold annual meetings at such times and places as may be designated by the Board of Directors and specified in the notice thereof, for the election of officers and any other business as may be properly brought before the meeting.

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

Section 3. Special Meetings: Special meetings of the Society shall be held at any time and place as specified in the notice thereof whenever called by the President or any two (2) or more members of the Board of Directors.

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

Article 8. Officers

Section 1. Officers: The officers of the Society shall consist of a President, President-elect, Secretary, Treasurer, Editor, and Historian, all of whom, except the President, shall be elected by and from the membership by a majority vote of members or by mail. The first President of the Society shall be elected by and from the membership at the organizational meeting for a term extending to the beginning of the first annual meeting. Thenceforth, the President-Elect shall automatically accede to the office of President at each annual meeting, or when the President is unable or unwilling to act for any reason. Nominees for each elective office of the Society shall be selected by a nominating committee of three (3) members appointed at the annual meeting by the President. Nominations may also be presented from the floor. The President and President-Elect shall hold office from the date of election at the annual meeting until the election of their successors at the next annual meeting, and shall not be eligible for re-election to the same office for a successive term. The Secretary, Treasurer, and Editor shall hold office from the date of election at the annual meeting until the election of a successor at the third following annual meeting and shall be eligible for re-election. The Historian shall hold office from the date of election at the annual meeting until the election of a successor at the fifth following annual meeting and shall be eligible for re-election. No member shall occupy more than one office at any one time.

Section 2. Duties and Powers of the President: The President shall be the Chief Executive Officer of the Society and shall preside at all meetings of the Society and the Board of Directors, have and exercise general and active management of the Society, execute and enforce all orders and resolutions and regulations duly adopted by the Board of Directors, execute all contracts in the name of the Society, and perform such other duties as assigned by the Board of Directors.

Section 3. Duties and Powers of the President-Elect: In the absence of the President, or in the case of failure to act, the President-Elect shall have all the powers of the President and shall perform such other duties as shall be imposed by the Board of Directors from time to time.

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

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

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

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

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

Article 9. Board of Directors

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

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

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

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

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

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

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

Article 10. Miscellaneous Provisions

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

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

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

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

Article 11. Amendments

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

1. Dates ('91), ('92) refer to last
meeting attendance or last dues payment
($5.00 Regular, $1.00 Student, $25.00 Sustaining/Corporate).

2. H = Honorary Member

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