THE FIREFLY

Proceedings of the Sixteenth Annual Meeting of the Tennessee Entomological Society

October 20-21, 1988
Music City Rodeway Inn
Nashville, Tennessee

Volume Three

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MUSIC CITY RODEWAY INN

Coreoidea (Hemiptera: Heteroptera) of Arkansas, with Notes on the Biology of Liorhyssus hyalinus (Rhopalidae) - Robin M. Smith and Harvey E. Barton, Arkansas State University, Jonesboro, AR.

A survey of the Coreoidea of Arkansas was undertaken in order to establish records for the state. Geographic distribution and seasonal occurrence of coreoids are reported; host plant records, where known, are also included. Collection over a three year period resulted in 32 species for the superfamily. Eighteen species of Coreidae, four species of Alydidae and 11 species of Rhopalidae were represented.

Laboratory rearing of Liorhyssus hyalinus was successfully completed on Euphorbia maculata (Euphorbiaceae), a previously unreported host plant for this rhopalid. This paper completes our survey of the Coreoidea of Arkansas.

The Use of Pheromones in Conjunction with Electric Light Traps for the Capture and Destruction of the Indian Meal Moth, Plodia interpunctella Hubner - Blake A. Bevill and Harvey E. Barton, Arkansas State University, Jonesboro, AR.

The percentage of male Plodia interpunctella captured by electric traps baited with a sex pheromone produced by Concept Membranes Inc. was not significantly different ($t = 0.711$; $P > 0.05$) than electric light traps without the pheromone. The percentage of male P. interpunctella captured by electric light traps baited with a sex pheromone produced by Zoecon Corp. was significantly different ($t = 5.1398$; $P < 0.05$) than electric light traps without the pheromone. Therefore sex pheromones can increase the effectiveness of electric light traps. Temperature is a greater determining factor for the capture of P. interpunctella than the age of moths from 1-6 days old. Males and females have a 1:1 ratio in their responsiveness to electric light traps.

Aquatic Macroinvertebrates of an Intermittent Ozark Stream, Independence County, Arkansas - Phoebe A Harp, Arkansas State University, Jonesboro, AR.

The primary purpose of this study was to describe the aquatic marcoinvertebrate fauna of an Ozark intermittent stream in Independence County, Arkansas, and to report related biological water temperature, alkalinity, pH, and volume flow.

A total of 15 bimonthly collecting trips resulted in a list of taxa associated with successive faunal groups: fall-winter and spring-pool. Volume flow had the major impact on the macroinvertebrate community in this intermittent stream. The fall-winter fauna disappeared when stream flow was drastically reduced or had ceased. A new species of Trichoptera, Lepidostoma n. sp., nr. ontario, was determined from this study.

Endophyte Presence in Tall Fescue and its Effects on Japanese Beetle and Tobacco Wireworm Populations - Jason Oliver and Charles D. Pless, University of Tennessee, Knoxville, TN.

Presence of the endophyte Acremonium coenophialum Morgan Jones and Gams, a fungus within tall fescue (Festuca arundinacea) affects fescue plants, livestock, and insect populations in different ways. The presence of endophyte in fescue is beneficial in establishing pastures by imparting characteristics such as increased density, improved plant vigor, insect resistance, and greater stress tolerance within the plant. Large acreages of endophyte-infested pastures recently have been implicated with large annual losses in cattle production approximating $800 million. On the other hand, endophyte presence is beneficial to agriculture in reducing pest insect populations. Specific insects known to be negatively affected by endophyte presence include the sod webworm, fall armyworm, flour beetle, bird-cherry oat aphid, and field crickets. Present entomological research has concentrated on the effects of the endophyte on foliar or above ground insects. Information regarding endophyte and the effects on soil insects is limited. Preliminary research indicates that populations of two soil insects of economic importance, the Japanese beetle (Popillia japonica) and the tobacco wireworm (Conderus vespertinus), may be reduced in the presence of endophyte. A toxin may be entering the soil complex from the fungal endophyte located in the leafy stem area of the fescue plant. More research is needed to establish the relationship between the endophyte and soil insect populations.

Influence of Tobacco Exudates on Activities of Two Species of Predaceous Bugs - Barry A. Crutchfield and Charles D. Pless, University of Tennessee, Knoxville, TN.

A series of laboratory studies was conducted to determine the influence of tobacco exudates on predation and oviposition by the stilt bug, Jalysus wickhami Van Duzee, and big-eyed bug, Geocoris sp. Three tobacco entries (GR 115, TN 86, and PDJA 309) were selected for experimentation and have distinctly different exudate levels and, in turn, have varying degrees of physical stickiness. GR 115 is a burley tobacco breeding line which has low exudate levels and no physical stickiness. TN 86 is a burley cultivar with high exudate levels and moderate physical stickiness. PDJA 309 is a flue-cured tobacco breeding line with high exudate levels and high physical stickiness. Preliminary studies indicate that the leaf surface of PDJA 309 has adhesive properties about three times greater that of TN 86. GR 115 was found to have no adhesive properties.

Stilt bug predation on tobacco aphids, Myzus nicotianae Blackman, was not significantly different for the three tobacco entries; however, the big-eyed bug displayed a significantly greater amount of predation on aphids on GR 115, than on TN 86 and PDJA 309. In no-choice oviposition tests, stilt bug laid significantly more eggs on PDJA 309 than on GR 115. There was no significant difference in stilt bug oviposition on TN 86 and PDJA 309 in the free choice condition; however, significantly more eggs were laid on TN 86 and PDJA 309 than on GR 115. Preliminary results

of a field survey indicate that high populations of stilt bug correspond with high aphid populations on TN 86 and PDJA 309.

Seasonal Phenology of Clearwing Moths in Tennessee, with Emphasis on Dogwood Borer - Laura Rogers and Jerome F. Grant, University of Tennessee, Knoxville, TN.

A two-year study was conducted to determine the seasonal incidence of clearwing moths attracted to the pheromone z-z octadecadien-1-ol acetate and to assess infestation levels of dogwood borer on dogwood trees in commercial nursery, urban, and forest habitats in Tennessee. Eight species of clearwing moths were collected during 1987-1988: Podosesia syringae (Harris), lilac borer; Paranthrene simulans "palmii" (Grote), an oak borer; Synanthedon scitula (Harris), dogwood borer; Synanthedon rhododendri (Beut.), rhododendron borer; Synanthedon exitiosa (Say), peachtree borer; Synanthedon fatifera Hodges, a viburnum borer; Synanthedon acerni (Clemens), maple callous borer; and Synanthedon decipiens, a borer of cynipid galls on oak.

Lilac borers were the most abundant species collected and represented ca. 70% of the moths collected in the nursery and urban habitats and ca. 41% of the moths collected in the forest habitat. The dogwood borer represented ca. 10% of the moths collected in the nursery and urban habitats but were not collected in the forest habitat. Approximately 45% of the moths collected in the forest habitat were rhododendron borers.

The highest infestation level of dogwood borer on dogwood was found in the urban habitat (ca. 60%). All nursery blocks examined were infested with dogwood borer with average percent infestation ca. 6%. Approximately 1% of the trees examined in the forest habitat were infested with dogwood borer.

Natural Enemies of Heliothis on Tobacco in Eastern Tennessee - Doug S. Bidlack, Jerome F. Grant and Charles D. Pless, University of Tennessee, Knoxville, TN.

A two-year study was conducted to evaluate the natural enemy complex of Heliothis larvae on tobacco. Heliothis larvae and selected predators were monitored weekly at two locations (Knoxville and Greeneville) in eastern Tennessee. Larvae were also collected, placed in diet cups, taken to the laboratory, and reared to assess percent parasitism and parasitoid species composition.

Heliothis larval populations peaked three times from mid-June to mid-October, with the first peak occurring from late June to early July, the second in mid-August and the third from mid to late September. The most abundant predators were lady beetles, stilt bugs and big-eyed bugs. Lady beetle immatures and egg masses showed two distinct peaks, one in early August and the other from the end of September to early October, but the adult population remained fairly constant from the end of July through October. Stilt bug adults and immatures both peaked once in mid-August and big-eyed bug adults and immatures once in early August in 1987. However, in 1988, the big eyed bug adults peaked twice, once in mid-July and again in mid-September and the immatures were present in very low numbers with no definite peaks.

During this two-year study, Compoletis made up over 90 percent of the parasitoid complex at both locations in eastern Tennessee. Other parasitoids included Cardiochiles, Microplitis, Archytas and other tachinids.

Pesticide Registration or "The Far Side" of Science - Dan T. Barber, Dow Chemical Corporation

No Abstract Submitted

Potomac Horse Fever in Tennessee - Reid R. Gerhardt, University of Tennessee, Knoxville, TN.

The history and occurrence of Potomac Horse Fever (PHF) in other states was reviewed. It was reported that in 1987 there were four cases of PHF in eastern Tennessee [Knox (3) and Hawkins (1)] and six cases in 1988 (Hawkins, Sullivan, Marion, Coffee, White and Putnam Counites with one case each). Vector collection methods included light traps, Manatobia traps, CO_2 traps, and a horse-baited trap. Horses were also examined for ectoparasites. Potential vectors found were mosquitoes, horse and deer flies, Culicoides, black flies, and ticks.

An Update on Regulatory Pest Problems in Tennessee - Michael E. Cooper, Tennessee Department of Agriculture

The honeybee tracheal mite became established during the year in several counties of East and Middle Tennessee. Mortality of seemingly healthy colonies, with plenty of food reserves was observed late last winter. Evidently bees infested with tracheal mite are not able to overwinter well. The presence of the mites seems to interfere with metabolic processes of the bees as they cluster to survive cold temperatures. Surveys this summer for the Varroa mite were negative.

Both the black imported fire ant (BIFA) and the red imported fire ant (RIFA), continue to become established in the state. Portions of Hardin and McNairy counties have been quarantined, for the presence of the BIFA. The BIFA has also been found in Wayne, Hardeman, and Lawrence Counties (Lawrence and Hardeman counties are 1988 new county records for the BIFA). The RIFA continues to be almost routinely intercepted on nursery stock shipped into the state, especially in the Memphis area. At the present there is one RIFA infestation active in Memphis and six in the Nashville area. The RIFA a also been found to have overwintered in Jackson, Nashville, Knoxville, and Cleveland. It has overwintered in Nashville on several occasions.

The gypsy moth survey performed this summer caught 91 moths in 13 counties, with the highest number of catches being in Sevier, Davidson, and Sequatchie. First indications are the Sequatchie County catches are that of an isolated infestation. The area is a remote portion of Waldens Ridge east of Dunlap, 27 moths were caught in three adjacent traps. The full story here won't be known until a survey can be performed this winter.

Boll Weevil Eradication Program - An Update - Richard E. Caron, University of Tennessee, Agricultural Extension Service, Jackson, TN.

Tennessee cotton growers may see the Boll Weevil Eradication Program (BEWP) in the early 1990's. Advantages of eliminating the boll weevil from weevil from Tennessee and the U.S. cotton belt include 1.) reduced grower cost of weevil control and damage, 2.) reduced environmental contamination, and 3.) general enhancement of beneficial insect populations.

BWEP focuses on early season overwintered weevils, mid-season weevil reproduction (where needed), and late-season weevil diapause control. The adult is the only life stage that can be controlled. The primary means of weevil detection in the BWEP is the pheromone trap. Introduction of the BWEP in Middle Tennessee is dependent upon BWEP enabling legislation passed by the Tennessee Legislature and passage of BWEP referendums in North Alabama and Central Alabama by cotton growers.

BWEP is controlled by USDA-APHIS, but other local, state, and national organizations are involved. Other facets of BWEP will be discussed.

Life History of Cereal Leaf Beetle, <u>Oulema melanopus</u>, in Tennessee - Jerome F. Grant and Charles R. Patrick, University of Tennessee, Knoxville, TN. - Jackson, TN.

The cereal leaf beetle is a serious pest of small grains in many parts of the wheat-growing regions of the United States. Reports of damage to wheat caused by the cereal beetle in Tennessee has increased in the past five years. Larvae and adults feed on the leaves of the plant, removing long strips of foliage between the veins. This feeding damage reduces the quality and quantity of wheat production. A two-year study was initiated to provide information on distribution, life history, and seasonal incidence of cereal leaf beetle on wheat in Tennessee.

Cereal leaf beetle has been reported from almost every county (ca. 98% of the counties) in eastern and middle Tennessee; however, this beetle has only been reported from Madison County in western Tennessee. Fortunately, the beetle is not a serious problem in many of the counties in the eastern and middle areas of the state, as few problems have been reported in some of these areas. The potential exists, however, for serious problems to develop in the future if populations continue to increase and spread across the wheat-growing regions of the state.

Eggs are laid, usually in pairs, on the upper surface of the leaf, primarily along the middle of the leaf. Larvae and adults primarily feed on the upper surface of the leaf. Adult beetles overwinter in field borders, wheat stubble, etc. and move into wheat fields during mid-to-late March. They feed, mate, and then begin to oviposit onto the wheat plants. Eggs are found during late March to early April. Larvae are present in the field from early April to late May to early June. The larva deposits a globule of fecal material on its back. This black globule is moist and easily removed upon contact with the body of the larva. Prior to pupation, larvae crawl down the wheat tiller and pupate in the soil or underneath the debris on the surface of the ground. Adults

emerge 7-10 days later and feed on any suitable food source that is available. Corn plants are suitable food sources and high densities of cereal leaf beetle adults are found on corn during mid-to-late June or early July. After feeding for ca. one week, the adults move out of the fields to oversummer/overwinter and will return to the fields in the following March or April. Only one generation of cereal leaf beetle occurs per year.

During both years of this two-year study, densities of cereal leaf beetle populations on wheat located at the Highland Rim Experiment Station peaked at levels above the economic threshold of one larva or adult/flagleaf (1.2 and 2.4 larvae/tiller during 1987 and 1988, respectively). No parasitoids were found to attack the egg or larval stages of cereal leaf beetle.

Baythroid: Control Spectrum and 1988 Field Performance - Charles B. Guy, Mobay Corporation, Little Rock, Arkansas

BAYTHROID, formerly FCR 1272, is a synthetic pyrethroid developed by MOBAY Corporation and was registered for cotton insect control in January, 1988. BAYTHROID (cyflurthrin) is contact insecticide with low mammalian toxicity. Although BAYTHOID primarily provides control by contact on the target pest, it also is effective via ingestion of treated foliage. Other characteristics include residual activity, light stability, and resistance to wash off by rainfall.

The use rates for cotton insect control with Baythroid is 0.0125 to 0.10 lb. AI/A. For the major cotton insect pests (cotton bollworm and boll weevil) 0.025 to 0.05 lb. AI/A is recommended. In commercial applications in 1988 0.028 and 0.033 lb. AI/A were the most common rates used for these pests. For Heliothis control, many growers were . able to extend the application interval with BAYTHROID to 9-10 days from a standard 6-7 day schedule.

A unique quality of BAYTHROID is the activity on boll weevil. BAYTHROID offers boll weevil control on a bollworm schedule (6-7 days). In a field test at Marianna, AR in 1988 BAYTHROID at 0.028 lb. AI/A gave 80% control of boll weevil punctured squares with 2 applications at a 7 day interval. Scout xtra at 0.018 lb. AI/A applied two times on the same schedule gave 49% control.

BAYTHROID provides better alfalfa weevil control than the insecticides presently used. In 1988 field tests BAYTHROID provided greater control than Cygon, FURADAN, Imidan, Supracide, Lannate and Lorsban. In a test conducted at Springfield, TN BAYTHROID at 0.022 and 0.033 lb. AI/A gave 88 and 94% control 28 days after treatment. The commercial standards were less effective than BAYTHROID at 28 days after treatment.

BAYTHROID also provides control of potato leafhopper in alfalfa. Testing during 1988 BAYTHROID at 0.033 lb. AI/A gave 90 and 97% potato leafhopper control at 6 and 13 days after treatment respectively.

Future crop registrations for BAYTHROID will include; alfalfa, tomatoes, corn, cole crops, potatoes, soybeans, and peanuts. The alfalfa registration will be especially to Tennessee.

Systematic and Historical Biogeography of New World Polycentropus Caddisflies - Steven W. Hamilton, Department of Biology, Austin Peay State University, Clarksville, TN.

The methodology of historical biogeography has become more clearly defined in recent years. Vicariance hypotheses must be considered and tested before applying dispersal explanations. Vicariance hypotheses are corroborated by finding congruent area relationships in other unrelated taxa and by finding geological evidence that also indicates such area relationships.

The 74 species of Polycentropus occurring in the New World comprise four natural units. The Nigriceps species group is endemic to the Greater Antilles and its sister taxon, the Confusus group is distributed in eastern North America. The Arizonensis group, four species confined to central Mexico and the southwestern United States, is the sister taxon to the more widely distributed Gertschi group which occurs in Central and South America, Mexico and Western North America. Together the Nigriceps and Confusus groups fit into the "North American Caribbean Track."

The geohistory of the New World is reviewed from approximately 200 mya to present and is then compared to the area relationships indicated by the phylogenetic history of these four groups. For New World Polycentropus two historical biogeographic scenarios are proposed, each combining vicariance and dispersal explanations.

Potential Use of Two Plant-Feeding Weevils to Suppress Thistle Populations in Tennessee - Paris L. Lambdin and Jerome F. Grant, University of Tennessee, Knoxville, TN.

Musk thistle, Carduus thoermeri Weinmann, is recognized as a serious problem infesting thousands of acres throughout the United States, including many areas in Tennessee. This plant species is a major nuisance along highway and railroad right-of-ways, unkept ditchbanks, pastures and unused farmland, in addition to areas around suburban estates throughout Tennessee. This weed has become increasingly important to agriculture in the state as more efficient means of land use are sought.

We will initiate a research project in 1989 to assess the biological control potential of plant-feeding insects to suppress populations of musk thistle in eastern and middle Tennessee. The initial phase of this research will concentrate on the release and establishment of two introduced weevil species, which feed specifically on thistle. The two weevils to be evaluated are the head weevil, Rhinocyllus conicus Froelich, and the rosette weevil, Thrichosirocalus horridus (Panzer). The head weevil, native to central and eastern Europe and the Mediterranean Region, and the rosette weevil, native to southern Europe, were introduced into the U.S. in 1969 and 1974, respectively. Both species have been released in several states, including California, Maryland, Missouri, Montana, Nebraska, and Virginia, and have been shown to suppress populations of thistle by 70-95% in some instances.

The weevils will be released during late spring and early summer at 11 locations in eastern and middle Tennessee. In addition, three locations will be selected for non-release or control study areas. Thistle growth parameters and selected biological information on the weevils will be recorded biweekly for

populations at each location. The development and impact of these plant-feeding weevils on thistle populations will be monitored and evaluated throughout the study period to assess their potential impact on this plant pest.

The initial objective of this project is not to eradicate thistle but to reduce the thistle stands to acceptable levels. Upon establishing these weevils in Tennessee, some of the major benefits expected from this project include: 1) a non-toxic, non-polluting means of controlling thistle, 2) a method of thistle control that is compatible with other means of control, such as mowing 3) a permanent, self-perpetuating means of control, and 4) an environmentally safe method of effectively reducing a problem plant. Biological control, such as the use of these plant-feeding insects, is not a quick-fix solution to our thistle problem that has developed over many years. However, this technique should provide an alternative method of reducing the numbers of thistles over a large region and reduce our dependency upon herbicides for control of thistle.

Lepidoptera of the Great Smoky Mountains National Park - J Keith Watson and Paris L. Lambdin - Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN.

With the concern for the arrival of Lymantria dispar (L.), the gypsy moth, in the Great Smoky Mountains National Park (GSMNP) due to its potential impact on the environment and on non-target species, officials determined it was necessary at this time to survey the various habitats within the park to identify those native Lepidoptera species that exist within each habitat type.

The GSMNP and the University of Tennessee Department of Entomology and Plant Pathology entered into a cooperative agreement to obtain this goal. The objectives of the project were to: 1) collect and identify the native Lepidoptera of the GSMNP, 2) determine seasonal abundance of selected species; 3) develop a computerized database of native GSMNP Lepidoptera, and 4) document species diversity.

Ten permanent light trapping sites were selected and operated to trap moths at 21 day intervals from March through November 1988. Species of butterflies were collected both opportunistically and on scheduled day hikes to various habitats. Specific habitat characterization will be determined by GSMNP officials and correlated with species collected.

Light trap samples were taken to the laboratory, sorted into species lots, counted, and labelled. Specimens in good condition were spread and mounted, identified, and stored in Cornell drawers. Data were entered onto database files for analysis and future reference. All unmounted material was stored in a freezer for analysis during the winter months.

One-hundred and twenty samples were made from the ten sites. Sample size ranged from 4 - 5000 specimens per sample. Thirty-five percent of the samples have been sorted. Approximately 400 species of moths and 46 species of butterflies have been collected and thirty percent of the moths have been identified. Several species of moths could possibly be used as indicators for any environmental changes that may have a significant impact on the fauna of the park should pesticide applications become necessary. A few species have

been found that have peak flights that occur in late May through June. Many samples collected in 1988 remain to be sorted, and additional samples will be collected in 1989.

Tennessee Entomological Society
Minutes of the 1988 Annual Meeting

October 20-21, 1988

Board of Directors Meeting
(10:36 A.M., October 20)

Present: Harvey Barton, Blake Bevill, N. B. Shamiyeh, Russ Patrick, Rich Caron

President Bill Shamiyeh called the meeting to order at the Music City Rodeway Inn, Nashville, TN.

1. The Board decided that registration and dues would be $15 and $5. Dues for students and honorary members would be $1 and $0, respectively.

2. The new T.E.S. brochure was discussed. It is expected that Charles Watson will present a report on the brochure's format during the Business Meeting.

3. T.E.S. should pay for dinners for students who give papers under new restaurant (non-banquet) procedures.

4. Other topics the Board briefly discussed included:

    a. Prediction and Evaluation Committee report.

    b. The T.E.S. newsletter and the need for an Editor position created for the newsletter.

    c. The "point system" for recertification. This should be explained to the T.E.S. membership by Gene Burgess.

    d. Need to check on the newly revised T.E.S. constitution.

The Board Meeting was adjourned at 10:50 A.M.

Sessions of the Annual Meeting

The 1988 Annual Meeting of the Tennessee Entomological Society was called to order by Harry Williams at 1:00 P.M., October 20th. Harry chaired Session I, including seven papers from 1:00 - 3:00 P.M. Reid Gerhardt chaired Session II, including four papers from 3:15 to 4:30 P.M.

A dinner (no formal banquet) was held at the Music City Rodeway Inn restaurant beginning at 7:00 P.M.

The T.E.S. Business Meeting was held on the morning of October 21, followed by paper Session III, including five papers and chaired by Jaime Yanes, Jr.

Business Meeting
(8:15 A.M., October 21)

President Bill Shamiyeh called the Business Meeting to order at 8:15 A.M., October 21. President Shamiyeh thanked all Committee Chairmen and their committees, especially the Local Arrangements and Program Committees for their efforts on the facilities and 1988 program.

Thanks were also extended to Carolyn Schmidt for her assistance in registration.

The minutes of the October 1987 Meeting and August 1988 Board Meeting (handed out during registration on October 20th) were accepted by the membership.

Point System (Recertification) Report

Gene Burgess explained the "point system" for recertification of restricted use or commercial use applicators. The major aspects of the point system are:

1. Ten points are required over 5 years.
2. Points are received by attending meetings (in-state or out-of-state) that deal with pests, pesticides, pesticide or environmental safety, etc.
3. A maximum of 5 points can be assigned per meeting.
4. The T.E.S. Meeting is worth 2 points.
5. Gene needs a copy of the meeting program and a list of attendees including names, addresses, and social security numbers.

Committee Sign-Up

All T.E.S. members were encouraged to sign up for committees (and chairmanship) on which they would like to serve.

Treasurer's Report

Rich Caron, Secretary/Treasurer, presented the financial status of T.E.S. up to October 15, 1988. The report was accepted by the membership.

- T.E.S. pins are available for $10.00 each.
- We are spending less money on "Firefly Notes" by changing publishers .
- Money should not be spent for pins for a few years (42 pins on hand).
- Money will be saved by dropping the T.E.S. Banquet.

Committee Reports

Constitution Committee - M. E. Snodgrass (Chairman)

A revised October 1988 copy of the T.E.S. constitution was passed out to the membership.

1. Article 10, Section 4, line 3; change "carrying in" to "carrying on."

2. Article 9, Section 1, lines 3-4; delete "one of whom shall be a graduate student."

3. Article 8, Section 1, lines 4-6; "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." Therefore, be it known that the 1988 meeting is the 15th Annual Meeting of T.E.S.

Program Committee - Harvey Barton (Chairman)

Harvey acknowledged a good program and thanked all of the speakers for their participation.

Membership Committee - Charles Watson, Jr. (Chairman)

Charles discussed 3 projects that he and his committee are working on:

1. T.E.S. Flier advertising the Society

   - prepared and available.

2. List of Tennessee Colleges and Universities - to be used as a core for a mailing list - consists of 43 state and private institutions. If anyone has suggestions for other names to be added to the list, let Charles know.

3. T.E.S. Brochure - under preparation. Joyce's Print Shop, Clemson, SC can produce the brochure: 1,000 black and white brochures for $200-$300. Charles needs negatives (black and white or color) illustrating entomological pursuits: e.g., people in the field, speakers, microscope work, etc. Three photos are needed. The brochure needs to be general to preclude brochure becoming obsolete. The best date to send out the brochure may be beginning of the fall semester (e.g. early September).

Auditing Committee - Carroll Southards (Chairman)

The books are in order.

Prediction and Evaluation Committee - Jaime Yanes, Jr. (Chairman)

The Prediction and Evaluation Committee report was passed out to the membership. Over the past few years, reports have been decreasing. There is need of more information from T.E.S. members for the report.

Publication and Editorial Committee - Mike Cooper (Chairman)

Mike discussed the production of Firefly Notes and was thanked for the publication by the membership. U. T. Knoxville is publishing Firefly Notes now and the price is considerably cheaper than the last commercial publisher. Firefly Notes may be published annually.

Reid Gerhardt suggested that Firefly Notes be renamed "The Firefly." The suggestion was put into a motion and accepted by the membership.

Publicity Committee - No Report

Local Arrangements Committee - No Report

Nominating Committee - Gene Burgess (Chairman)

Gene thanked the members of his committee for their work.

1. Harry Williams was nominated for President-Elect. There were no nominations from the floor. Harry was elected President-Elect by acclimation.

2. Rich Caron was nominated to resume duties as Secretary/Treasurer. There were no nominations from the floor. Rich was reelected Secretary/Treasurer by acclimation.

[Mike Cooper needs abstracts for the next publication of "The Firefly."]

Awards Committee - Reid Gerhardt (for Gary Lentz (Chairman))

1. A plaque of appreciation was presented to Bill Shamiyeh as outgoing President.

2. The 1988 Bruer Award was announced: The winner is Dottie Hodges of Hamblen Co. She is the State 4-H winner in entomology. The award is to be presented to her later.

3. All students were congratulated for their papers in the student paper contest. The 1988 student winner is Jason Oliver, U.T. Knoxville, who received a $50.00 award.

Old Business

None

New Business

1. The T.E.S. membership agreed to meet at the 1989 (16th) Annual Meeting at the Music City Rodeway Inn, Nashville, during October 19-20.

2. New President Harvey Barton will need to send a letter of congratulations to Jason Oliver and a letter of thanks to the meeting hotel.

3. There is a need for new name tags with T.E.S. name and logo to be printed for the 1989 meeting.

4. The membership is happy with the buffet-style of dinner versus the banquet.

5. The Awards Committee should look into the possibility of presenting a plaque to student contest winners.

6. Students should consider submitting award applications to the Tennessee Agricultural Chemical Association's Student Award contest.

7. The Publicity Committee should consider the possibility of a T.E.S. Newsletter. The Newsletter would contain entomological events occurring in Tennessee each year. The Newsletter Editor could be a Board Member or a Committee Chairman.

8. Nominations from the floor were made for two new Board members-at-large for 1988-89. Jay Avery and Mike Cooper were nominated and were elected by acclimation by the membership.

9. President-Elect Harvey Barton was escorted to the podium

by Past Presidents Reid Gerhardt, M. E. Snodgrass, Charles Pless, Mike Cooper, Gene Burgess, and Joe Dunn. President Bill Shamiyeh then passed the gavel to Harvey Barton.

10. President Barton proceeded to 1) thank the Program Committee members and 2) encourage T.E.S. members to sign the Committee sign-up sheet.

Board of Directors Meeting
(11:25 A.M., October 21)

Present: Jay Avery, Russ Patrick, Bill Shamiyeh, Harvey Barton, Rich Caron.

President Harvey Barton called the meeting to order at the Music City Rodeway Inn, Nashville, TN.

1. All new members were approved. These were Robert Brown, Hans Chaudhary, William Clouse, Berry Crutchfield, Phillip Foster, Debbie Gillis, Charlie Guy, Steven Hamilton, Frank Heery, Laura Hendricks, Gregory Long, Jason Oliver, Dennis Onks, Feng Pingshong, Kelly Skelton, and Chris Weed.

2. The Board discussed the need for a good podium light and microphone for the future. There is a need for a buffer room between our meeting and other meetings for noise reasons.

3. There are two "16th" Annual Meetings on record. The 1988 Annual Meeting was the 15th, but recorded as the 16th. From now on, the numbering system is 16th 1989, 17th 1990, 18th 1991, etc.

4. The Music City Rodeway Inn was approved as the meeting site of the 1989 meeting to be held October 19-20, 1989.

5. The Past President sends a letter of thanks to the hotel.

6. The President sends a letter of congratulations to the student contest winner.

7. The Board agreed to meet again in August 1989.

8. The President needs to send a letter of thanks to Carolyn Schmidt for her help in registration.

9. The Board will look into the production of T.E.S. name tags for the 1989 Meeting.

The Board of Directors meeting was adjourned at 11:50 A.M.

T.E.S. TREASURER'S REPORT
8/17/88 to 9/12/89

Balance: $1,776.62
(as of 8/17/88)

Income (August-October 1988)		
Dues Regular	$5.00	
Student	3.00	
	$8.00	$1,784.62
Expenses (August-October 1988)		
Stamps	$17.25	
Stamps	10.20	
Plaques	53.29	
	$80.74	$1,703.88
Cash for October 1988 Meeting - $100.00		$1,603.88
		(as of 10/20/88- audited by Auditing Committee, Carroll Southards, Chairman)

Expenses (October 1988 Meeting)		
Music City Rodeway Inn		
(Student Meals	$ 53.41	
(Coffee Breaks)	44.60	
University of Tennessee		
(Firefly Notes)	135.00	
Jason Oliver (Student Award)	50.00	
	$283.01	$1,320.87
Income (October 1988 Meeting)		
Dues	$176.00	
Registration	510.00	
Pins (7)	70.00	
Sustaining Members	75.00	
	$831.00	$2,151.87
Deposited cash for Meeting - $100.00		$2,251.87
Income (October 1988 - September 1989)		
Dues Regular	$ 5.00	
Student	1.00	
	$ 6.00	$2,257.87
Pin (1)	$ 10.00	$2,267.87
Expenses (October 1988-September 1989)		
Mike Cooper		
(Firefly Notes cover paper)	$ 10.97	$2,256.90

Number of pins on hand: 40 (September 12, 1989)

ATTENDANCE ROSTER OF THE 1988 ANNUAL MEETING OF THE TENNESSEE ENTOMOLOGICAL SOCIETY

Member	Affiliation	Location
Avery, Jay P.	University of Tennessee	Trenton, TN
Barton, Harvey E.	Arkansas State University	State University, AR
Bevill, Blake A.	Arkansas State University	State University, AR
Bidlack, Doug S.	University of Tennessee	Knoxville, TN
Bogard, James B.	TN Dept. of Agriculture	Nashville, TN
Bolin, Ronald E.	TN Dept. of Agriculture	McMinnville, TN
Brown, Robert C.	University of Tennessee	Morristown, TN
Burgess, Edward E.	University of Tennessee	Knoxville, TN
Caron, Richard E.	University of Tennessee	Jackson, TN
Cate, Randy H.	University of Tennessee	Martin, TN
Chaudhary, Hans R.	TN Dept. of Agriculture	Harriman, TN
Clouse, William T.	TN Dept. of Agriculture	Oak Ridge, TN
Cole, Bruce A.	TN Dept. of Agriculture	McMinnville, TN
Cooper, Michael E.	TN Dept. of Agriculture	Nashville, TN
Crutchfield, Berry A.	University of Tennessee	Knoxville, TN
Dunn, Joe C.	American Cyanamid	Nashville, TN
Eisler, James I.	TN Dept. of Agriculture	McMinnville, TN
Foster, Phillip D.	TN Dept. of Agriculture	Nashville, TN
Gerhardt, Reid R.	University of Tennessee	Knoxville, TN
Gillis, Debbie L.	Austin Peay State Univ.	Clarksville, TN
Grant, Jerome F.	University of Tennessee	Knoxville, TN
Greer, Lee	Valent	Dunlap, TN
Guy, Charlie B.	Mobay Corporation	Little Rock, AR
Hadden, Charles H.	University of Tennessee	Knoxville, TN
Hamilton, Steven W.	Austin Peay State Univ.	Clarksville, TN
Harp, Phoebe A.	Arkansas State University	Jonesboro, AR
Heery, Frank L.	TN Dept. of Agriculture	Harrison, TN
Keener, James A.	TN Dept. of Agriculture	Knoxville, TN
Lambdin, Paris L.	University of Tennessee	Knoxville, TN
Long, Gregory L.	Tennessee Tech. University	Cookeville, TN
Oliver, Jason B.	University of Tennessee	Knoxville, TN
Onks, Dennis O.	University of Tennessee	Springfield, TN
Patrick, Charles R.	University of Tennessee	Jackson, TN
Pingshong, Feng	University of Tennessee	Knoxville, TN
Pless, Charles D.	University of Tennessee	Knoxville, TN
Rogers, Laura E.	University of Tennessee	Knoxville, TN
Shamiyeh, N. B.	University of Tennessee	Knoxville, TN
Smith, Robin M.	Arkansas State University	State University, AR
Snodgrass, Mendell E.	U.S.D.A.(Retired)	Knoxville, TN
Snodgrass, Myrtice L.		Knoxville, TN
Southards, Carroll J.	University of Tennessee	Knoxville, TN
Watson, Charles N., Jr.	Clemson University	Clemson, SC
Watson, Earnest B.	U.S.D.A.-APHIS-PPQ	Nashville, TN
Watson, J. Keith	University of Tennessee	Knoxville, TN
Weed, G. Chris	ICI Americas, Inc.	Murfreesboro, TN
Williams, Harry E.	University of Tennessee	Knoxville, TN
Wilson, Dalton L.	U.S.D.A.-APHIS-PPQ	Brentwood, TN
Yanes, Jaime, Jr.	University of Tennessee	Nashville, TN

BOARD OF DIRECTORS

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Mike Cooper - Past President
Harvey Barton - President Elect
Rich Caron - Secretary/Treasurer
Charles Patrick - Historian
Gary Lentz - Member at Large
Blake Bevill - Member at Large

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Keith Watson

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Lee Greer
Russ Patrick
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Charles Pless

PUBLICATION & EDITORIAL
Mike Cooper - Chairman
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Jim Bogard
Cheryl Wallinder

PUBLICITY
Harry Williams - Chairman
Lynn Snodderly
Sylvester Davis

TENNESSEE ENTOMOLOGICAL SOCIETY PREDICTION AND EVALUATION COMMITTEE REPORT

October 20-21, 1988

Jaime Yanes, Jr., Chairman

Committee Members
Rich Caron
Russ Patrick
Lee Greer
Charles Pless
Bruce Kauffman

TENNESSEE DEPARTMENT OF AGRICULTURE
PLANT INDUSTRIES DIVISION
P.O. BOX 40627, MELROSE STATION
NASHVILLE, TENNESSEE 37204

MEMORANDUM

TO: Dr. Jaime Yanes, U.T. Agricultural Extension Service - Nashville

FROM: Michael E. Cooper, Entomologist III

SUBJECT: Tennessee Entomological Society - IDEP Report

DATE: October 6, 1988

The 1988 growing season was an interesting one. The drought complicated several insect problems, by forcing pests to seek new or different hosts, and by delaying the emergence of some pests by several weeks.

The Eastern tent caterpillar caused considerable concern among home owners in the Middle Tennessee area this year. Defoliation was widespread and heavy, and migration to pupation sites by the mature larvae was particularly disturbing to the public due to the large numbers involved.

Cereal leaf beetle (CLB) egg laying was first observed in the field by early April in Bedford County. Feeding damage by the young larvae was evident by the end of the month in Maury County. Economic damage was observed by the end of May. Adult CLB feeding in large numbers on young corn was observed for the second year in a row in Montgomery and Robertson Counties. This usually occurs where corn is planted next to wheat. The adults will feed briefly before dispersing, and the damage is usually of no consequence to quickly growing plants.

Damage by the Alfalfa weevil was widespread and severe again this year, requiring multiple chemical treatments. Damage to second growth alfalfa was also observed.

Bollweevil damage to cotton was very widespread this summer affecting all cotton growing areas of the state, particularly the southern tier of West Tennessee counties. Growers in these areas, in some cases, sprayed as many as 12 times to maintain control. This pest has been making a steady come back in recent years.

For the first time in several years soybean growers were faced with a serious pest problem late in the season. Soybean podworm (Heliothis zea) damage was widespread in both Middle and West Tennessee, and in some cases severe. Many growers were caught unaware of the problem because there had been no problems of this kind for several years. Drought related stress on cotton and corn and the podworm may have affected development to the point that when the

podworm matured after leaving corn the only crop suitable for egglaying was soybeans.

Emergence of soil and turf inhabiting insects such a green June beetles, Japanese beetles, May beetles, cicada killers etc., was delayed due to the drought. When emergence did occur it was spotty and over a long period of time. Normally, these insects emerge in late June and early July, and are gone by early August. Cicada killers were present until Mid-September. Rains in late July saved these insects, and prevented the desiccation of young larvae etc., that would have occurred had the drought continued at the levels it did during June.

Boxelder bugs continue to be a problem in Middle Tennessee with inquiries from homeowners being numerous. The swarming and congregating around homes and office buildings normally occurs in the fall and spring, and on warm days during the winter.

Ticks were very numerous this past year. Several tick related diseases were reported including: Lyme disease, Rocky Mountain Spotted Fever, Q-Fever, Tularemia, and Typhus being reported.

The red biotype of the green peach aphid was a very widespread problem to tobacco this summer, affecting tobacco growing areas of all parts of the state. Black shank was also a significant problem to tobacco growers this summer.

The honeybee tracheal mite became established during the year in several counties of East and Middle Tennessee. Mortality of seemingly healthy colonies, with plenty of food reserves was observed late last winter. Evidently bees infested with tracheal mite are not able to overwinter well. The presence of the mites seems to interfere with metabolic processes of the bees as they cluster to survive cold temperatures. Surveys this summer for the Varroa mite were negative.

Both the black imported fire ant (BIFA) and the red imported fire ant (RIFA), continue to become established in the state. Portions of Hardin and McNairy counties have been quarantined, for the presence of the BIFA. The BIFA has also been found in Wayne, Hardeman, and Lawrence Counties (Lawrence and Hardeman counties are 1988 new county records for the BIFA). The RIFA continues to be almost routinely intercepted on nursery stock shipped into the state, especially in the Memphis area. At the present there is one RIFA infestation active in Memphis and six in the Nashville area. The RIFA a also been found to have overwintered in Jackson, Nashville, Knoxville, and Cleveland. It has overwintered in Nashville on several occasions.

The gypsy moth survey performed this summer caught 91 moths in 13 counties, with the highest number of catches being in Sevier, Davidson, and Sequatchie. First indications are the Sequatchie County catches are that of an isolated infestation. The area is a remote portion of Waldens Ridge east of Dunlap, 27 moths were caught in three adjacent traps. The full story here won't be known until a survey can be performed this winter.

The sweet potato whitefly caused a considerable amount of problems to greenhouse growers and plant dealers this past year. This white fly is very difficult to control and was found to be moving on plant material shipped in from Florida. The winter Poinsettia crop was greatly affected by this pest requiring numerous pesticide applications.

PEST PROBLEMS IN SOYBEANS IN 1988
- R. E. Caron

In late June, county agents and soybean growers were advised to monitor "typical" seedling soybean insect pests such as bean leaf beetles, three-cornered alfalfa hoppers, and grasshoppers. Very little pest activity was reported until July. The crop had been drought-stressed and planting was delayed... setting the stage for a late crop.

In an isolated incident (Fentress Co.), many acres of soybeans were destroyed where the crop was no-tilled into wheat and clover. Cutworms were suspected of moving from the clover to the beans. Soybeans which were no-tilled into wheat alone were not damaged.

By early July, we experienced problems with the false chinch bug, Nysius raphanus, on newly emerged soybeans no-tilled into canola (rape). N. raphanus populations had apparently increased on the canola and moved to soybeans. This situation occurred from Mississippi to Canada. Since N. raphanus was an unusual problem, the following description is offered for future reference:

The adult is a little larger than 1/16" long (gnat-like in size) and immatures are smaller. Adults and immatures have piercing-sucking mouthparts and are responsible for causing brown spots on stems and cotyledons of 1-3" soybean seedlings in no-till situations. False chinch bugs were observed on young soybean plants no-tilled into rape crop stubble. Adults are gray-brown, narrow-bodied, and have silvery (shiny) wings. Immatures are gray with reddish-brown spots on the abdomen. They occurred in extremely high numbers and were able to migrate quickly on the soil surface. The false chinch bug is known to be a pest of beets, potatoes, cabbage and other crucifers and can be found on grape, corn, and sorghums. We observed them to feed on soybean seedlings and horsenettle (following a rape crop) and to migrate into adjacent cotton fields where they could be found on plants and on the ground between rows. One homeowner reportedly found them in his garden on peppers and tomatoes.

Very little is known about their biology. Still less is known about economic threshold levels or control of false chinch bugs in the above cases. From what we have seen, we were well above economic threshold levels that might be established (in rape stubble-beans). Cygon (dimethoate) 4E at 0.1 lb.ai/A was tried with mixed results. Orthene 75 SP at 0.5 lb.ai/A was suggested as a cure in rape

stubble-beans. If the sheer numbers of false chinch bugs did not severely injure or kill the new-emerged beans, the chances for delayed soybean maturity was likely. Problems were observed in Lake, Gibson and Madison Counties. Whole fields of newly emerged soybeans infested with N. raphanus were reported to be completely destroyed in Mississippi and Kentucky.

Grasshoppers and striped blister beetles were reported to be damaging no-till soybeans by July 29.

By mid-August, corn earworm adults were beginning to emerge and pose considerable problems for soybeans. Emergence lasted for several weeks. As a result of extensive corn earworm moth egg-laying pressure and duration, earworm damage to soybeans was the worst it has been for at least 10 years. Yield loss was very high in certain areas, especially in Middle and East Tennessee. Other caterpillar species associated with soybeans concurrent with earworms were green cloverworms, yellow striped armyworms, and assorted looper species.

Other pod feeders of concern in soybeans included stink bugs (especially the green stink bug) from mid-August through September.

PEST PROBLEMS IN COTTON IN 1988

R. E. Caron

The vast majority of overwintered boll weevils captured in pheromone traps (mid-April to early June) were located in the southern tier of cotton-producing counties in West and Middle Tennessee. Weevils captured in Shelby, Fayette, Hardeman, McNairy, and Hardin Counties numbered 1,866 or 80.2% of the total weevils in West Tennessee (16 total counties were monitored). Weevils captured in Lincoln County numbered 808 or 99.6% of the total weevils in Middle Tennessee (comparing Lincoln and Rutherford Co.).

Thrips injury was moderate to heavy and occurred from cotton emergence through much of June. Thrips injury to seedling cotton was not as bad as that of 1984 but growers were forced to make overtop insecticide applications even where preventative granular systemic insecticides were applied at planting.

During June, many cotton fields were treated for overwintered boll weevils to prohibit production of first generation weevils. Bollworm/tobacco budworm populations were relatively light and tarnished plant bug problems were virtually nil. Predatory big-eyed bugs were the most notable and highly abundant beneficial insect species.

By July 8, bollworm/tobacco budworm-damaged squares had reached 5% in some fields and a short peak of bollworm/tobacco budworm moth emergence had occurred. Growers and scouts were advised to monitor spider mites closely due to the persistent hot, dry weather.

Adult and egg-stage green stink bugs were observed in cotton as of mid-July. Subeconomic populations of bollworm/tobacco budworm larvae were also present at that time.

By July 22, boll weevils were causing damage and reproducing in the southern tier of cotton counties (as high as 38% square damage in Hardeman Co.). Otherwise, insect problems were relatively minor with bollworms (corn earworms) locked into the corn crop.

By August 5, boll weevil pressure was steadily increasing in the southern tier of counties and square damage was beginning to occur in fields further north (e.g. 8% in Chester Co. and 5% in Madison Co.).

During mid-August bollworm moth populations were increasing rapidly, with moths and eggs observed in the field and with moth populations up in blacklight and pheromone traps. Boll weevils were dispersing north and were found as far north as Lake Co. in West Tennessee. Green stink bugs were increasing in numbers (in general) and whitefly and aphid populations were prevalent, especially where a series of boll weevil insecticide applications were made.

Concurrent with relatively high bollworm populations through August were subeconomic populations of cabbage loopers, salt-marsh caterpillars and yellow-striped armyworms. Although cabbage loopers were unusually abundant, they attacked foliage and were generally considered to be a minor threat to cotton yields.

Boll weevil pheromone traps are being monitored this fall (September to November) to gather data on spatial and numerical potential of overwintering weevil populations.

Insect Evaluation & Prediction Report

Corn

Black cutworm - Minor problems across state during 1988

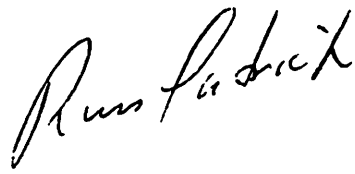
European corn borer - No large scale infestations reported during the season 1988.

Southwester corn stalk borer - Some areas in West Tennessee had some damage from this pest. No wide scale problem.

Wheat

Cereal leaf beetle - Middle and East Tennessee report heavier than normal infestation levels. Over 60 counties now have reported cereal leaf beetle infestations in 1988.

Hessian Fly - No serious problems in Tennessee in 1988.



INSECTS PROBLEMS---1988
BILL SHAMIYEH
UNIVERSITY OF TENNESSEE
ENTOMOLOGY AND PLANT PATHOLOGY

SMALL GRAINS - WHEAT

Cereal leaf beetle: Infestation levels were moderate in Robertson county averaging 1.5 larvae/stem. Aphid populations were light.

FORAGE CROPS - ALFALFA

Alfalfa weevil: Alfalfa weevil larvae counts were high in plots in springfield and Springhill averaging 50 and 40 larvae/ sweep respectively.

Potato leafhopper: Populations reached economic threshold levels by the first week in July.

FIELD CROPS - FIELD CORN

European corn borer: Infestation levels were 10% at Highland Rim and 33% at Greeneville.

Fall armyworm: Populations were very light in Middle and East Tennessee (less than 30%).

TOBACCO

Tobacco aphid: Population densities of the red form were high in Middle and East Tennessee. Development of sooty mold fungus was observed at Greeneville.

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

Budworms & Hornworms: Populations were light on burley and dark tobacco.

VEGETABLE CROPS - Snap beans

Mexican bean beetle: Very light infestation levels for both the spring and fall planting.

European corn borer: In late August, 11 ECB larvae were counted per 20 linear feet of snap beans planted in early July.

Broccoli

Cabbage loopers: Pre-treatment counts at Crossville averaged 4 loopers/ plant.

Bell Peppers

Flea beetles: Beetle counts were high early in the season at Plateau Experiment Station.

Sweet Corn

Corn earworm: Earworm populations at Crossville were very heavy averaging 1.3 worms/ infested ear.

1988 INSECT PEST SITUATION IN COMMERCIAL HORTICULTURAL CROPS

Jaime Yanes, Jr.
Assistant Professor
U.T. Extension Entomology and Plant Pathology

NURSERIES

Eriophyid mites were severe early in the season on most of the conifers (in particular, hemlocks). Eastern tent caterpillar populations were unusually high this year. Pine bark adelgid continues to be a problem insect of Eastern white pine. Large emergences of whitefringed beetles fed on several species of ornamentals. The Middle Tennessee nursery area experienced damage to maples from an unidentified tip borer. The dogwood borer continues to be the most serious pest of dogwoods. 'Heritage' river birch were severely injured by the spring population of European birch aphids. Bagworms were severe on several species of ornamentals.

GREENHOUSES

The sweetpotato whitefly was the most serious insect pest when first discovered in the state in November of last year. Many of the producers had difficulty managing this pest because commonly-used whitefly insecticides were ineffective. Some mum growers had a slight problem controlling aphids. Tomato spotted wilt virus continues to be found across the state in greenhouses. This disease is vectored by thrips.

TURFGRASS

May beetle adult emergence occurred at typical levels this past spring. Populations of green June beetle grubs caused extensive damage in several locations across the state. Both the spring and fall populations were damaging. Sod webworm adult emergence was very high this year. However, an increase in the larval damage was not seen.

FRUITS

The spotted tentiform leafminer is becoming an increasingly important pest of apples in East Tennessee. The most severe pest of apples continues to be the European red mite. Late-season damage by stinkbugs on apples is still occurring.

In strawberries, growers are still having problems with the root weevil complex of beetles. Increases in the use of Furadan 4F after harvest should reduce most of the problem. Cranberry fruitworms were damaging in isolated cases on blueberries.

VEGETABLES

Problem insects of crucifers included imported cabbageworm, cabbage looper and Pydrin-resistant diamondback moth larvae. Corn earworms caused earlier than usual damage to sweet corn this year. This insect was also a problem on Southern peas. Lower than usual populations of earworms were seen in tomatoes this year. Squash bugs were severe in squash and zucchini. Late-season damage by white grubs continues to be a problem for producers. Mosaic viruses were severe in squash and pumpkins due to the inability to control the aphid vector.

DARK TOBACCO

The most serious insect was the red form of the green peach aphid. Orthene, which had always been effective was showing less activity for this pest .

TENNESSEE INSECT CONDITIONS REPORT - 1988

FOREST INSECTS

Defoliation by the loblolly pine sawfly (Neodiprion taedae linearis Ross.) covered larger areas of southwestern Tennessee (Chester, Fayette, Hardeman, Haywood, Madison,McNairy & Shelby Counties) and Weakley County but was generally below 50 percent. This figure represents a drop in defoliation since 1987. More scattered areas of heavier defoliation (over 50 percent) occurred in Middle Tennessee from Wilson County south to Franklin County and west to the Tennessee River than in 1987.

Counties with southern pine beetle (Dendroctonus frontalis Zimmerman) activity increased from 18 in 1987 to 27 in 1988. Statewide, both the number of spots (4,026) and the number of trees killed (442,826) increased over 70% when compared with the 1987 totals. Infestations were at epidemic levels in 8 counties along the southern border of the state where both natural and planted pine were killed in some of the counties. (Bradley, Hamilton, Hardeman, Hardin, Marion, McMinn, McNairy, Wayne). In all of the epidemic counties except Hardeman County, the number of spots increased over the 1987 totals. Eighteen (18) other counties had endemic populations of this beetle (Carroll, Chester, Decatur, Fayette, Franklin, Giles, Grundy, Henderson, Hickman, Lawrence, Loudon, Lewis, Madison, Meigs, Monroe, Perry, Polk, Roane,Sequatchie).

Rainfall shortages for the second year in a row have caused continued Ips spp. beetle-infested trees statewide (Benton, Bledsoe, Campbell, Carroll, Chester, Decatur, Hardeman, Henderson, Lauderdale, Madison, Putnam, Rhea, Scott, Wayne counties). Some Ips spots have ranged up to 50 trees in size. Black turpentine beetle (Dendroctonus terebrans (Olivier) spots were also reported in Chester, Hardeman, McNairy, Morgan, and Scott Counties.

Gypsy moth (Lymantria dispar (L.)) trapping to date has shown a 39 percent increase in the number of moths caught statewide over 1987 catches (101 moths in 1988). Sixteen (16) counties had at least one moth trapped with two new county records (Franklin & Sequatchie). The increased trap catches occurred in the eastern third of the state. Sequatchie and Sevier counties had the most moths (see attached map).

A breakdown of gypsy moth catches by county was as follows: Carter County, 8 moths with 1 multiple catch; Cumberland County, 1 moth; Davidson County, 14 moths with 1 multiple catch; Franklin County, 2 moths; Greene County, 2 moths; Jefferson County, 1 moth; Johnson County, 1 moth; Knox County, 2 moths; Loudon County, 4 moths with 1 multiple catch; Rutherford County, 1 moth; Sequatchie County, 27 moths with 2 multiple catches; Sevier County, 27 moths with 8 multiple catches; Stewart County, 1 moth; Sullivan County, 7 moths with 2 multiple catches; Washington County, 1 moth; Wilson County, 2 moths.

Yellow poplar weevil (Odontopus calceatus (Say)) feeding was reduced to 50 percent or less in areas where defoliation was the worst last year (Claiborne, Grainger, Hancock, & Union Counties). However, light feeding was observed in more counties this year than last. Generally, the upper half of East Tennessee and the Cumberland Plateau and neighboring counties in Middle Tennessee had some weevil activity on yellow poplar and sassafras (see attached map).

The eastern tent caterpillar (Malacosoma americanum (Fabricius)) caused greater defoliation than last year's populations. More than 75 percent of the black cherry up to 12 inches in diameter received greater than 50 percent defoliation in East and Middle Tennessee. Defoliation levels were also higher in West Tennessee.

Light feeding by inchworms of various species were reported on hardwoods of the oak-hickory type in Stewart County. Scattered post oaks were over 50 percent defoliated in Wilson County by an unidentified spring-feeding caterpillar. The spring cankerworm (Paleacrita vernata (Peck)) lightly fed on hackberry in Davidson and Wilson Counties.

An increase in hackberry butterfly (Asterocampa celtis (Boisduval & LeConte)) larvae was evident in Bedford and Wilson County. Sightings of clouds of these butterflies were reported in Lewis, Marshall and Maury Counties. (See attached map for other county catches of the hackberry butterfly.)

Leaf browning by the locust leaf miner (Odontota dorsalis (Thunberg)) was at lower or static levels in 66 percent of the reporting counties in East and Middle Tennessee. High level or increasing damage was detected in Anderson, Bedford, Carter, Giles, Johnson, Knox, Lincoln, Marshall, Sevier, Sullivan and Weakley Counties. The locust borer (Megacyllene robiniae (Forster)) attacks on plantings along road right-of-ways and in strip-mined areas caused mortality and branch dieback in Campbell and Scott Counties.

The oak lace bug (Corythucha arcuata (Say)) caused noticeable leaf yellowing of the entire crown of chinkapin oaks in forest stands along the bluffs above the Tennessee River in Hamilton County. Similar infestations were noted in McMinn, Rhea, Roane, and Polk Counties. This insect caused similar symptoms on some hardwood ridges in Davidson County where chinkapin oak was present.

Fall webworms (Hyphantria cunea (Drury)) caused generally light defoliation of boxelder, elm, hickory, redbud and black walnut statewide except for high level populations in Carter, Johnson and Sullivan Counties. Yellownecked caterpillars (Datana ministra (Drury)) were encountered more frequently on Shumard oak in Weakley County this year.

SHADE TREE INSECTS

The following shade tree insects had the greatest number of requests in Nashville in decreasing order: boxelder bug, eastern tent caterpillar, aphids and adelgids, wood and inner bark borers, maple petiole borer, gall-producing insects.

Several 100 tree spots of young eastern recedar have been defoliated over 50 percent by the bagworm (Thyridopteryx ephemeraeformis (Haworth)) in Smith and Rutherford Counties. Honey)locust, eastern white pine and spruce have been defoliated in urban areas in Cumberland, Davidson, Jefferson and Smith Counties. Other counties with increased activity include Bedford, Giles, Lincoln, Marshall, Williamson, Decatur, Henderson, Benton, Madison, Carroll, Carter, Hamblen, Johnson, and Sullivan. Despite these local bagworm population buildups, generally less than 5 percent of eastern redcedar along right-of-ways statewide have any noticeable defoliation.

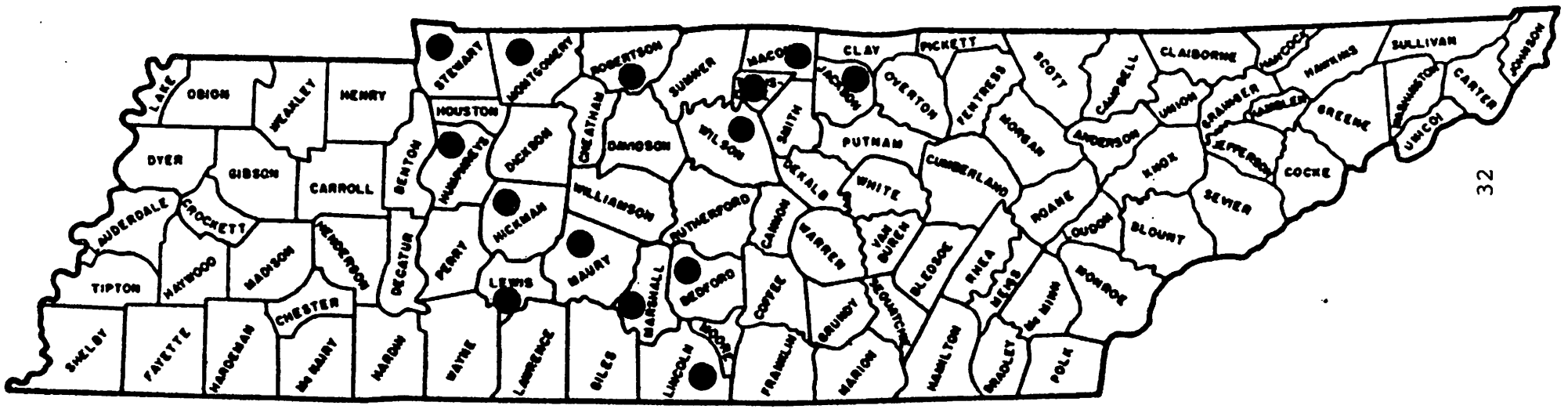
White pine weevil (Pissodes strobi (Peck)) infestations were noticeable in right-of-way plantings in the eastern portion of Powell Valley in Campbell County.

Free-feeding aphids (several species) were at higher levels this spring and early summer than last year on oaks, elms, yellow poplar, black walnut, sugar maple and birch in the upper half of Middle and East Tennessee. But little sooty mold (several fungus species) growth was observed on leaves underneath these aphid infestations. Pine bark adelgid (Pineus strobi (Hartig)) infestations continued to be a problem on white pine shade trees in East Tennessee and on occasional forest plantings as did Phylloxera (Phylloxera spp.) adelgid infestations in West Tennessee.

Infestations of the mimosa webworm (Homadaula anisocentra Meyrick) on mimosa and honey locust remained below 50 percent in Middle Tennessee. There was a reduction in the damage caused by the maple petiole borer (Caulocampus acericaulis (MacGillivray)) in Davidson County.

Large populations of the boxelder bug (Leptocoris trivittatus (Say)) continued to be a nuisance to homeowners in Davidson County for the third year in a row. The first flights of the Nantucket pine tip moth (Rhyacionia frustrana (Comstock)) occurred around the third week of April in Wilson County. This event was one month ahead of last year.

Rainfall shortages stressed the hickories in some urban and forested areas. These shortages allowed the hickory bark beetle (Scolytus quadrispinosis (Say)) to kill groups of trees in Anderson, Bradley, Chester, Giles, Hamilton, Hardin, Jackson, Knox, Lawrence, Morgan, Polk, Sevier, Union, and Wayne counties.. A bark beetle (Pityogenes hopkinsi Swaine) was responsible for urban white pine mortality in Carter County.



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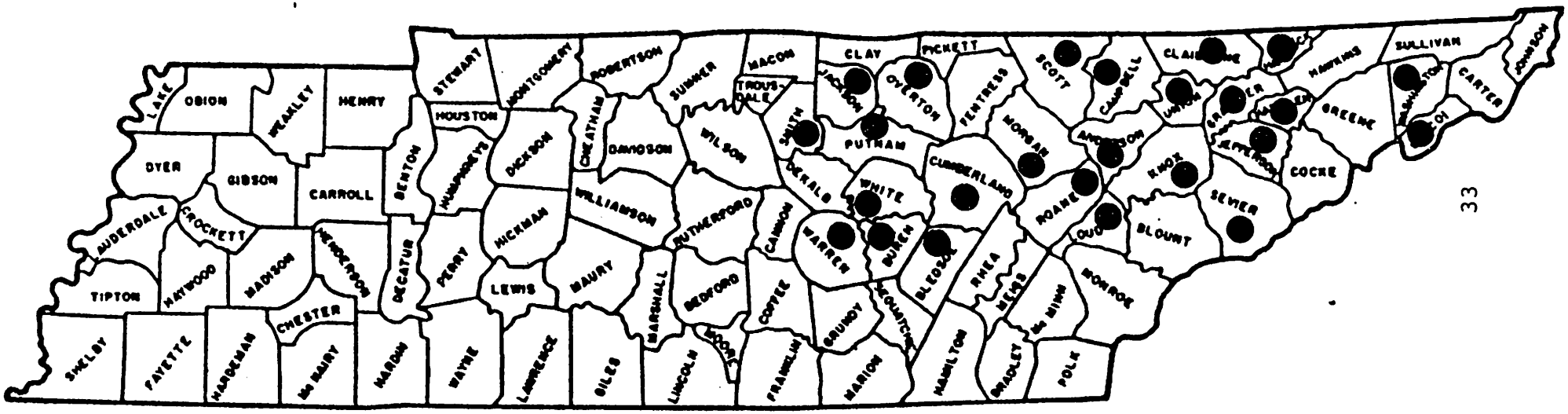
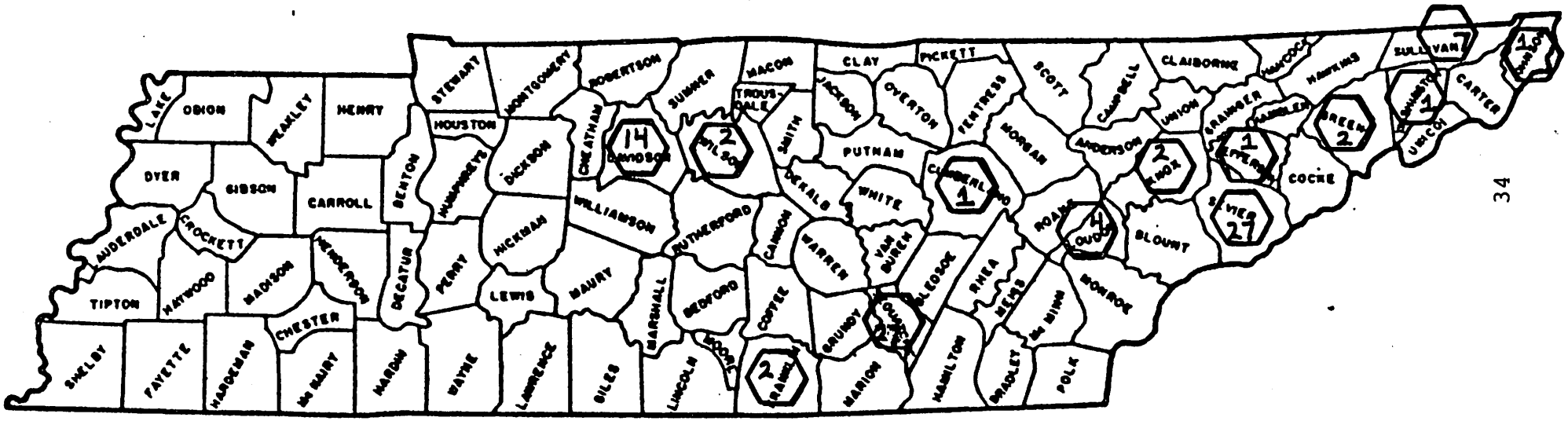
● Detection of Hackberry Butterfly Adults by County, 1988



● Detection of Yellow Poplar Weevil Leaf Damage by County, 1988



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Co. #

Number of Gypsy Moths Caught by County - September 27, 1988

Total Moths Caught - 91

HISTORICAL NOTES

Presidents of the Tennessee Entomological Society (1973 - Present)

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

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

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

Board of Directors Members at Large

Member	Term	Affiliation
Gary Lentz	'87 - '88	Univ. Tennessee
Blake Bevill	'87 - '88	Ark. State Univ.
Michael E. Cooper	'88 - '89	Tenn. Dept. Agric.
Jay P. Avery	'88 - '89	Univ. Tennessee

Historians of the Tennessee Entomological Society (1973 - Present)

Historian	Term	Affiliation
Charles Pless	'73 - '76	Univ. Tennessee
Herb Morgan	'76 - '79	USDA
Mendell Snodgrass	'79 - '82	USDA
Russ Patrick	'82 - '87	Univ. Tennessee

Historians Continued

Russ Patrick	'87 - '92	Univ. Tennessee

Honoary 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. Agric.

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.

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. Tennessee
John A. Hammett	1987	Tenn. Dept. Agric.

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

CONSTITUTION

of the

TENNESSEE ENTOMOLOGICAL SOCIETY

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

Article 3. Membership

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

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

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

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

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

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

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

Article 4. Membership Rights

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

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

Article 5. Membership Certificates

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

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

Article 6. Dues

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

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

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

Article 7. Meetings of the Society

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

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

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

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

Article 8. Officers

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

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

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

Section 4. Duties and Powers of the Secretary-Treasurer: The Secretary-Treasurer shall attend and keep the minutes of all

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

Section 5. Duties and Powers of the Historian: The Historian shall maintain and be responsible for keeping a complete and accurate history of the activities of the Society from year to year.

Section 6. Vacancies in Office: Any vacancy in the office of President-Elect, Secretary-Treasurer, or Historian, however occasioned, may be filled, pending the election of a successor by the Society, by a majority vote of the remaining Directors. Should an office be filled by vote of the Board of Directors, the person so elected shall not become the officer upon the next annual meeting unless elected as such by the Society according to the procedures set forth for the election of officers of the Society in Article 8, Section 1, of this Constitution.

Article 9. Board of Directors

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

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

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

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

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

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

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

Article 10. Miscellaneous Provisions

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

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

Section 3. All notices required to be given by this Constitution relative to any regular or special meeting of the Society or the Board of Directors may be waived by the Directors or members entitled to such notice, either before or on the date of the meeting and shall be deemed equivalent thereto. Attendance at any meeting of the Society 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 propoganda, 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('87), '88) refer to last meeting attendance or last dues payment ($5.00).
2. H = Honorary Member

November 11, 1988
T.E.S.
Membership List

Jay P. Avery
'88 1252 Manufacturers Row
Trenton, TN 38382
(901) 855-4550

Harold R. Bancroft
'87 Dept. of Biology
Memphis State University
Memphis, TN 38152
(901) 678-2592

Ruth A. Barber
'87 2511 Shaler LN
Knoxville, TN 37920
(615) 974-7110

Harvey E. Barton
'88 Box 501 Ark. State University
State University, AR 72401
(501) 972-3082

Blake Bevill
'88 P. O. Box 11
Dell, AR 72426
(501) 564-2538

Douglas S. Bidlack
'88 Entomology & Plant Pathology
P. O. Box 1071, Univ. of TN
Knoxville, TN 37901-1071
(615) 974-7135

James B. Bogard
'88 Plant Industries TDA
Box 40627, Melrose Station
Nashville, TN 37204
(615) 360-0130

Ronald E. Bolin
'88 TN Dept. of Agriculture
Rt. 1, Box 347A
McMinnville, TN 37110
(615) 890-8679

Carl D. Brown
H Dept. of Biology
Memphis State University
Memphis, TN 38111
(901) 454-2963

Robert C. Brown
'88 1930 Bluebird Circle
Morristown, TN 37814
(615) 586-5793

Howard L. Bruer
H 1604 Green Hills Drive
Nashville, TN 37215
(615) 269-9740

Edward E. Burgess
'88 Entomology & Plant Pathology
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7138

Jimmy L. Cagle
'87 P. O. Box 341
Winchester, TN 37398
(615) 967-1240

Richard E. Caron
'88 Entomology & Plant Pathology
605 Airways Blvd.
Jackson, TN 38301
(901) 422-1583

Randy H. Cate
'88 University Courts
Martin, TN 38237
(901) 587-7183

Hans R. Chaudhary
'88 Hillview Terrace
Rt. 7, Box C-24
Harriman, TN 37748
(615) 882-3144

William T. Clouse
'88 113 Amherst LN
Oak Ridge, TN 37830
(615) 483-9641

Bruce A. Cole
'88 Rt. 12, Box 73
McMinnville, TN 37110
(615) 668-8046

Michael E. Cooper
'88 Plant Industries Div. TDA
Box 40627, Melrose Station
Nashville, TN 37204
(615) 360-0130

Berry A. Crutchfield
'88 2521 Kingston Pike
Knoxville, TN 37919
(615) 637-9339

Sylvester Davis
'87 P. O. Box 60036
Nashville, TN 37206
(615) 360-0130

Joe C. Dunn
'88 724 Brownlee Drive
Nashville, TN 37205
(615) 352-5669

Lance Durden
'87 Dept. of Ento.,Mus. Support Center
Smithsonian Institution
Washington, D.C. 20560
(301) 238-3161

James I. Eisler
'88 Rt. 3, Box 253B
McMinnville, TN 37110
(615) 635-2783

John Fortino
'87 6077 Primacy Pkwy #310
Memphis, TN 38138
(901) 761-9711

Phillip Foster
'88 3809 Legate Ct.
Nashville, TN 37211
(615) 360-0130

Reid R. Gerhardt
'88 Entomology & Plant Pathology
Univ. of TN, P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7135

Debbie L. Gillis
'88 2061 Shelby Drive
Clarksville, TN 37043
(615) 645-5019

Jerome F. Grant
'88 Entomology & Plant Pathology
Univ. of TN, P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7135

Lee Greer
'88 Box 544
Dunlap, TN 37327
(615) 949-2747

Charlie B. Guy
'88 8813 Old Spanish Tr.
Little Rock, AR 72207
(501) 221-3226

Charles H. Hadden
'88 University of Tennessee
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7138

Steven W. Hamilton
'88 Department of Biology
Austin Peay St. University
Clarksville, TN 37044
(615) 648-7783

John A. Hammett
H 2545 Edge-O-Lake Drive
Nashville, TN 37217
(615) 361-4930

Phoebe A. Harp
'88 Rt. 8, Box 99-C
Jonesboro, AR 72401
(501) 935-2526

Frank L. Heery
'88 6677 Harrison Hghts.
Harrison, TN 37341
(615) 344-7186

Laura Ann Hendricks
'88 Cumberland University
206 Arbor Lake Blvd.
Hermitage, TN 37076
(615) 885-6312

Bruce W. Kauffman
'87 TN Div. of Plant Industries
Box 40627, Melrose Station
Nashville, TN 37204
(615) 360-0130

James A. Keener
'88 3211 Alcoa Hwy.
Knoxville, TN 37920
(615) 594-6098

Paris L. Lambdin
'88 UT Entomology & Pl. Pathology
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7135

Gary L. Lentz
'88 Entomology & Plant Pathology
605 Airways Blvd.
Jackson, TN 38301
(901) 424-1643

Gregory L. Long
'88 Tenn. Tech. University
Box 8726
Cookeville, TN 38505
(615) 526-7027

Hugh McCampbell
'87 Ag. Ext. Veterinary Medicine
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 546-9243

Ray Nabors
'87 Rt. 3
Portageville, MO 63873
(314) 379-5431

Jason Oliver
'88 3208 Bisco Road
Knoxville, TN 37931
(615) 693-6549

Dennis O. Onks
'88 Rt. 6, Box 121
Springfield, TN 37172
(615) 384-5292

Charles R. Patrick
'88 Entomology & Plant Pathology
605 Airways Blvd.
Jackson, TN 38301
(901) 422-1583

Jacky R. Payne
'87 Rt. #9, Box 124-C
Jonesboro, AR 72401
(501) 933-0117

Feng Pingshong
'88 Entomology & Plant Pathology
P. O. Box 1071, Univ. of TN
Knoxville, TN 37901-1071
(615) 974-6339

Charles D. Pless
'88 Entomology & Plant Pathology
P. O. Box 1071, Univ. of TN
Knoxville, TN 37901-1071
(615) 974-7135

Laura E. Rogers
'88 Entomology & Plant Pathology
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7135

N. B. Shamiyeh
'88 Entomology & Plant Pathology
P. O. Box 1071, Univ. of TN
Knoxville, TN 37901-1071
(615) 974-7135

Kelly M. Skelton
'88 Cumberland University
Rt. 1, Box 10B
Wartrace, TN 37183
(615) 389-6421

Myron Smith
H 2411 Reed Hooker
Eads, TN 38028
(901) 324-2161

Omar Smith
'87 3100 Emerald
Memphis, TN 38115
(901) 678-2585

Robin M. Smith
'88 P. O. Box 3740
State University, AR 72467
(501) 935-1733

Lynn J. Snodderly
'87 Rt. 3, Box 421
Strawberry Plains, TN 37871
(615) 974-7110

Mendell E. Snodgrass
H 228 Pat Rd.
Knoxville, TN 37922
(615) 966-7259

Myrtice L. Snodgrass
H 228 Pat Rd.
Knoxville, TN 37922
(615) 966-7259

Carroll J. Southards
'88 Entomology & Plant Pathology
P. O. Box 1071, Univ. of TN
Knoxville, TN 37901-1071
(615) 974-7135

Mary Ann W. Stephens
'88 1262 Hillwood Drive
Clarksville, TN 37040
(615) 647-8549

Larry Thead
'87 Pennwalt Corporation
5060 Horn Lake Road
Horn Lake, MS 38637
(601) 393-5732

Cheryl Wallinder
'87 P. O. Box 2344
Murfreesboro, TN 37133
(615) 896-6944

Charles N. Watson, Jr.
'88 Dept. of Entomology
Clemson University
Clemson, SC 29634
(803) 656-5058

Ernest B. Watson
'88 227 Sailboat Drive
Nashville, TN 37217
(615) 367-9121

J. Keith Watson
'88 Entomology & Plant Pathology
P. O. Box 1071, Univ. of TN
Knoxville, TN 37901-1071
(615) 974-6339

G. Chris Weed
'88 2229 Racquet Club Drive
Murfreesboro, TN 37129
(615) 895-2534

Jimmy R. White
H Rt. 5, Box 300
Brownsville, TN 38012
(901) 772-1919

Harry E. Williams
'88 Entomology & Plant Pathology
P. O. Box 1071, Univ. of TN
Knoxville, TN 37901-1071
(615) 974-7138

Dalton L. Wilson
'88 P. O. Box 1303
Brentwood, TN 37027
(615) 736-7250

Jaime Yanes, Jr.
'88 P. O. Box 110019
Nashville, TN 37222-0019
(615) 832-6802

Application for Membership in the

TENNESSEE ENTOMOLOGICAL SOCIETY

I (we), herewith, submit this application for membership in the Tennessee Entomological Society. Society pins are available to members for $8.00.

PLEASE PRINT

Name of Prospective Member _____

Affiliation _____

Address _____ ZIP Code _____

Phone Number Area Code ( )_____

Occupation _____

Please check

☐ Annual Dues $5.00 ☐ Annual Due for Students $1.00

☐ Society Pin $8.00 ☐ Sustaining Member Dues $25.00

Amount Enclosed _____

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