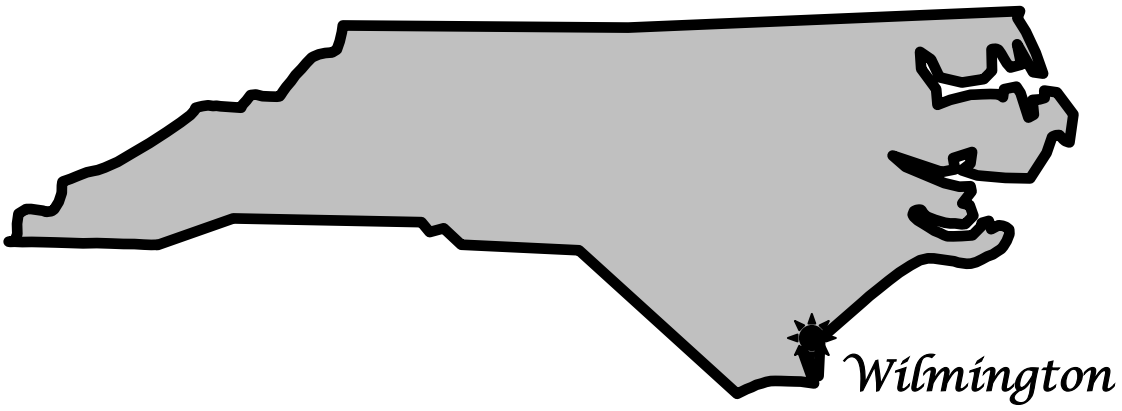
Proceedings

53rd Southern Forest Insect Work Conference



July 20 – 23, 2010

Hilton Wilmington Riverside

Wilmington, North Carolina

PROCEEDINGS

53rd Annual

SOUTHERN FOREST INSECT WORK CONFERENCE

Hilton Wilmington Riverside

Wilmington, North Carolina

20–23 July 2010

Kier Klepzig and Fred Stephen, Program Chairs

John Nowak, Local Arrangements

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Registration List, 53rd SFIWC, Wilmington, North Carolina

* = student, † = retired

Judy Adams
Zachary Arcaro
Chris Asaro
Matthew P Ayres
Brittany Barnes*
Chisolm Beckham
Ronald F Billings
Ryan Blaedow
Andrew J Boone†
Katalin Böröczky
Kayla Brownell*
LayLa Burgess*
Jordan L Burke*
Ryann Campbell*
Randy Chapin
Stephen R Clarke
Carlton W Cobb
Allen Cohen
Tom W Coleman
Robert N Coulson
Anthony W Courter
Christopher M Crowe
Gina Davis*
Jeffrey Dean
Carla Dilling*
Jamie Dinkins*
Don Duerr
Todd Edgerton
Jeffrey M Eickwort
Jennifer Emerson*
Melissa J Fischer*
James D Floyd*
Michelle S Frank
Larry Galligan
Kamal J K Gandhi
Micah Gardner*
Jerome F Grant
Donald M Grosman
Laurel J Haavik*
Solomon G Hailu*
Fred P Hain
Timothy J Haley
James Hanula
Jessica Hartshorn*
Nathan Havill
Brian Heath
Scott Horn
Misty Huddleston*
Jacob R Hudson*
Lisa Jackson
Robert Jetton
James K Johnson
Paul C Johnson
Crawford "Wood" Johnson
Sarah Jones
Joshua Jones*
Danielle Keeler*
Kier D Klepzig
Frank Koch
David L Kulhavy
Ashley Lamb
Wayne Langston
Craig Lawing
Nathan S Little*
Jeffrey Lombardo*
Andy Londo
Ace Lynn-Miller*
Jorge E Macías-Sámano
Sarah Marnell
Bud Mayfield
Dana McReynolds
Angela Mech*
James R Meeker
Paul Merten
Jason E Moan
Jessica Moan
Nathaniel Naumann*
T Evan Nebeker†
Wesley A Nettleton
John Nowak
Forrest L Oliveria
Kelly Oten*
Sarah Pears*
Carla Pimentel
Robert Rabaglia
Laurie Reid
James "Rusty" Rhea
Lynne K Rieske-Kinney
John J Riggins
Scott M Salom
Frank Sapio
Carolyn A Scott
William P Shepherd
Richard A Spriggs
Jenny Staeben*
Dale Starkey
Kevin Steed
James R Steinman
Fred Stephen
Doug Streett
John B Strider Jr
Brian Strom
Brian T Sullivan
Whitney Swink
John W Taylor Jr
Robert Trickel
Kimberly F Wallin
James E "Denny" Ward†

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27 students, 3 retirees, and 78 regular members = 108 registered participants

SFIWC 2010 Group Pictures

Figure 1
Front Row (left to right): Doug Streett, Tony Courter, Andy Boone, Brian Sullivan, Whitney Swink, Micah Gardner
Back Row (left to right): Nathan Havill, Jen Emerson, Judy Adams, Michelle Frank, Kimberly Wallin, Fred Hain, Rusty Rhea, Wes Nettleton, Jeff Dean

Figure 2
Front Row (left to right): Melissa Fischer, Gina Davis, John Strider, Jeff Eickwort, Jason Moan, Robert Trickel
Back Row (left to right): James Johnson, John Nowak, Chris Asaro, John Taylor, Paul Johnson, Robert Jetton, Paul Merten, Todd Edgerton

Figure 3
Front Row (left to right): Fred Stephen, Carolyn Scott, Ashley Lamb, Misty Huddleston, Lynne Rieske-Kinney, Kier Klepzig, Jerome Grant
Back Row (left to right): Richard Spriggs, Will Shepherd, Kelly Oten, Zachary Arcaro, James Floyd, Nathan Little, Carlton Cobb, Tim Haley

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Front Row (left to right): Denny Ward, Forrest Oliveria, Bud Mayfield, Lisa Jackson, Sarah Marnell, Jacob Hudson, Jeff Lombardo
Back Row (left to right): Joshua Jones, Randy Chapin, Scott Horn, Chris Crowe, Evan Nebeker, John Riggins, Andy Londo, Jim Meeker

Figure 5
Front Row (left to right): Laurel Haavik, Kamal Gandhi, Wayne Langston, Brian Heath, Craig Lawing
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Figure 6
Front Row (left to right): Brittany Barnes, Angela Mech, Cera Jones, Kayla Brownell, Carla Pimentel, Jamie Dinkins
Back Row (left to right): Dana McReynolds, Ryann Campbell, LayLa Burgess, Jordan Burke, Frank Koch, Scott Salom, Ron Billings

Figure 7
Don Grosman

Attendees not pictured: Matt Ayres, Chisolm Beckham, Katalin Böröczky, Steve Clarke, Allen Cohen, Tom Coleman, Bob Coulson, Carla Dilling, Don Duerr, Larry Galligan, Solomon Hailu, Jessica Hartshorn, Ace Lynn-Miller, Jorge Macías-Sámano, Jessie Moan, Nathaniel Naumann, Sarah Pears, Laurie Reid, Frank Sapio, Jenny Staeben, Dale Starkey, Kevin Steed, Jim Steinman, Brian Strom

53rd Southern Forest Insect Work Conference, July 20-23, 2010 Wilmington Riverside Hilton, Wilmington, NC

PROGRAM

Tuesday, July 20th

1:00-2:30PM	SPB Working Group (Carolina) SPB State of the Union. Stephen Clarke Updates on the Data Portal. Tony Courter SPB prevention and data portal. John Nowak SPB survey data on the portal. Tony Courter and Judy Adams SPB II: It's a wrap. Kier Klepzig Comparison of Lindgren funnel SPB trap catches in Talladega National Forest: Standard lures vs. addition of endo-brevicomin. John Riggins Adaptive management of forest pests? Matt Ayres Definition of outbreak. Stephen Clarke
2:30-3:30PM	Forest Health Task Force (Carolina)
3:30-5:00	State Cooperators Meeting (McRae)
3:00-5:00PM	Poster Setup (Magnolia and Dogwood)
3:00-7:00PM	Meeting Registration (Lower Lobby)
4:45-5:15PM	AD Hopkins Award Committee (Carolina)
5:15-5:45PM	Executive Team Meeting (McRae)
6:30-8:30PM	Mixer and Reception (at Le Catalan Restaurant, 224 S. Water Street)

Wednesday, July 21st

Breakfast on your own

8:00AM-Noon	Registration (Lower Lobby)
General Session	(Magnolia/Dogwood)
8:30-8:35	Welcome – Bud Mayfield, SFIWC Chair
8:35-9:00	Opening Presentation – Forest Management in a Changing Environment. Al Lucier, NCASI
9:00-9:45AM	Opening Business Meeting
9:45-10:00AM	Roger F. Anderson / AD Hopkins Award
10:00-10:30AM	Break and Group Photos
10:30-12:00PM	Plenary Session: Invasives and Landscapes Landscapes defined – Bob Coulson Modeling alien forest pest invasion risk at broad scales: concepts and research challenges – Frank Koch and Dennis Yemshanov

[**Abstract:** In general, our research focuses on spatio-temporal aspects of forest pest invasions: how, when, and where forest pests are most likely to be introduced, spread, and become established. We use various approaches and tools to characterize these invasion "risks" at a national, continental or similarly broad spatial scale. For instance, a pest risk map is the spatial realization of an underlying model in which information about a pest's biology and behavior (i.e., its hosts, environmental constraints, and means of spread) is used to estimate the level of invasion risk for all geographic areas of interest. While risk maps can help decision makers to more effectively allocate resources to combat pest threats, most of these maps have similar limitations. Foremost, they usually present invasion risk statically, although risk is dynamic through time and invasions are rarely at equilibrium. Moreover, the maps typically do not treat invasion as a process (i.e., as a chain of events from pest entry to impact).

During the last few years, we have developed an integrated risk modeling approach in which we simulate the process of invasion with a spatially explicit, stochastic model, allowing us to represent the key stages of an invasion through time. Through repeated replications of this simulation model, we are able to estimate invasion risk for every location in an area of interest as a numeric probability. The model also offers us the capacity to assess knowledge gaps and uncertainties about a pest of interest and their impacts on the risk estimates. In this presentation, we illustrate the approach using the example of the sirex woodwasp (*Sirex noctilio*) invasion in eastern North America. Additionally, we present our related research on human-mediated pathways of long-distance pest dispersal, which we have found to be a key contributor to the aforementioned uncertainties in the risk estimates. In particular, we highlight methods for quantitative modeling of human-mediated pathways associated with international trade and domestic freight transport as well as with other

human activities (e.g., recreation). The findings from such quantitative analyses may be incorporated into pest risk models/maps, subsequently improving their resulting risk estimates and making them more beneficial to the decision making process.]

Hemlock woolly adelgid landscape genetics: tools for examining origin and spread– Nathan Havill

12:00-1:30PM Lunch on your own

1:30-2:30 AD Hopkins Award Presentation – Scott Salom

2:30-5:15 PM Graduate Student Session - Jamie Dinkins and Laurel Haavik, Moderators

Feeding behavior of hemlock woolly adelgid. Kelly Oten and Fred Hain

Evaluation of hybridization among three *Laricobius* species, predators of the hemlock woolly adelgid (Adelgidae). Melissa Fischer, Scott Salom and Loke T. Kok

Laricobius nigrinus dispersal dynamics in the eastern United States. Gina A. Davis, Carlyle C. Brewster, Scott M. Salom and Loke T. Kok

Gene expression changes in Fraser fir due to balsam woolly adelgid infestation. Jennifer Emerson, Ross Whetten and Len van Zyl, John Frampton

3:15-3:45 PM Break

Use of the wasp, *Cerceris fumipennis*, to detect pest Buprestidae in North Carolina. Whitney Swink and Christine Nalepa

Seasonal effects of first commercial thinning on *Ips* beetle activity in north Mississippi loblolly pine stands. James D. Floyd, Andrew J. Londo, John J. Riggins and T. Evan Nebeker

[**Abstract:** In comparison to the southern pine beetle, little is known about the three species of *Ips* bark beetles (*grandicollis, avulsus,* and *calligraphus*) which can be just as detrimental to southern pine plantations. *Ips* beetles commonly move into a stand following the first commercial thinning, feeding on slash and stressed trees; this project was designed to monitor *Ips* beetle reactions to two popular first commercial thinning regimens in north Mississippi loblolly pine stands. Treatment types included third row select, fifth row select and control. Treatments were four acres in size and replicated three times per site. By duplicating treatments on two study sites, this project could also evaluate *Ips* behavioral differences between a fall and summer harvest. *Ips* densities were recorded using line transects at periodic intervals throughout the treatments. Infested and non-infested materials were size classed using a modified Brown's planner intersect method, a method most commonly used to measure fuel loading. Observed *Ips* activity is expected to be higher following the summer treatment, when conditions are more favorable for *Ips* beetle movement. A greater concentration of *Ips* beetles in third row / select thin treatments is predicted due to an increase in pine slash in third row treatment types.

Approved for publication as journal article No. J-11928 of the Mississippi Agricultural and Forestry Experiment Station, Mississippi State University.]

The biology of southern pine beetle (*Dendroctonous frontalis* Zimmerman) in the non-traditional host species white pine (*Pinus strobes*). Micah Gardner and Fred Hain

The effect of habitat fragmentation on the spatial population genetic structure of southern pine beetle (*Dendroctonus frontalis*). Solomon G. Hailu, Kamal M. Ibrahim, Edward J. Heist, John D. Reeve

[**Abstract:** Southern Pine Beetle (SPB), Dendroctonus frontalis (Zimmerman), is one of the most destructive insect pests of pine trees in Southern United States, Mexico and Central America. There is relatively little information on the effect of habitat fragmentation on the connectivity and the spatial population genetics of SPB. This study therefore, adds to previously generated information by assessing how habitat fragmentation and landscape variables affect the genetic structure of Southern Pine Beetle. Insight of this nature will assist in understanding the temporal and spatial dynamics of SPB infestations. To address this issue, a suite of eight polymorphic DNA microsatellite markers were used to measure SPB movement over a representative range of SPB habitat and non-habitat (matrix). We found a highly significant population differentiation revealing the existence of non panmictic populations. Nonetheless, the populations exhibit a low level of genetic structure. It was supposed that gene flow, wide-range dispersal and recent divergent time could have contributed to the lower level of structure observed. The results revealed the effect of landscape structure and habitat fragmentation on SPB dynamics, particularly the degree to which different populations are connected by dispersal. In addition, this information is crucial for understanding the scale at which natural and anthropogenic disruptions in continuous forest habitat influence the spread of SPB infestations. Expanding to previous finding, lower genetic differentiation may imply that the populations might respond to treatments in a similar fashion at a bigger scale. Given absolute and relative estimates of matrix permeability to dispersal as discussed in the study, it might be possible to identify likely locations for future SPB infestations. This could improve our pest management system and forecast to possible treat by this native pest hence its positive implication in timber industry is obvious.]

Oviposition and colonization preferences of *Sirex noctilio* on southern pine species. Jamie E. Dinkins, John J. Riggins, Vic Mastro, Kelley E. Zylstra and Kamal J.K. Gandhi

[**Abstract:** As the number of established *Sirex noctilio* F. (Hymenoptera: Siricidae) populations in the northeast region of North America increase, there is a need to predict the potential damage of this invasive woodwasp in the southeast region. Our project aims to predict which economically important Southeastern *Pinus* species are the most preferred as initial hosts of *S. noctilio* using drilling, oviposition, and emergence tests. Although data is still being collected, in 2009 we presented *S. noctilio* adults with bolts of *P. virginiana* (Virginia pine), *P. taeda* (loblolly pine), and *P. sylvestris* (Scots pine). *Sirex noctilio* females were more likely to drill on *P. virginiana*, and more *S. noctilio* progeny emerged from *P. virginiana*. In 2010 we increased the choices to *P. echinata*, *P. elliotti*, *P. palustris*, *P. strobus*, *P. sylvestris*, *P. taeda*, and *P. virginiana*. Among these bolts, *P. strobus* was the most preferred host, followed by *P. sylvestris* and *P. virginiana*. Emergence data from 2010 will be collected when the progeny emerge. We hope to use these biological data to construct new GIS maps that more accurately predict the impact of *S. noctilio* on Southeastern pine species.]

North American host tree response to *Amylostereum areolatum*, the fungal symbiont of *Sirex noctilio*. Sarah Pears and Kimberly Wallin

[**Abstract:** *Sirex noctilio* Fabricius (Hymenoptera: Siricidae), a wood-boring wasp native to Europe, western Asia, and northern Africa is now considered established in New York, Pennsylvania, Michigan, New Hampshire, and southern Quebec. A single *S. noctilio* adult was found in Vermont in 2007. *S. noctilio* together with its obligate symbiotic fungi, *Amylostereum areolatum* will likely negatively affect populations of North American pines, as these species are the preferred hosts of the wasp. Female *S. noctilio* deposit asexual spores of *A. areolatum* in a host tree during oviposition. The fungus then grows, serving as food for the wasp larvae and eventually killing the tree. It is unknown

how vigorous and stressed pines respond to and defend against the fungus. The purpose of this study is to simulate *S. noctilio* attack and evaluate the interaction between conifer hosts and *A. areolatum*. Overall physiological responses in white pine (*Pinus strobus*) and red pine (*P. resinosa*), particularly tree defense mechanisms deployed against *A. areolatum*, are quantified. Information collected during this study will further understanding of the impacts that *S. noctilio* will have on North American forests, identify signs and symptoms of attack, and will support the development of silvicultural practices that minimize damage caused by *S. noctilio.* Preliminary results are presented here.]

Arkansas Siricidae: Adult phenology and nematode parasites. Danielle Keeler, Don Steinkraus and Fred Stephen

[**Abstract:** Siricidae (Hymenoptera) are rarely pestilent, due to their habit of only attacking weakened trees. However, unlike most Siricidae, one invasive species, *Sirex noctilio* Fabricius (Hymenoptera: Siricidae), is capable of attacking and even killing healthy pines. Although this species has not yet been found in Arkansas, it has the potential to become a threat to pines throughout the state. The overall goal of our research is to acquire information on the diversity and phenology of native Siricidae and their nematode parasites across Arkansas. Gaining new knowledge on life history of native siricids and their nematode parasites could assist in detection and possible management of *S. noctilio* if it should arrive. Panel traps baited with Contech Inc. *Sirex* lures are set up at sites in three distinct forest environments in, Ozark National Forest, Ouachita National Forest and Southern Arkansas. Trapped siricids are dissected to determine if parasitic nematodes are found in native siricid populations and molecular diagnostics will be done to identify nematode species. Determining abundance and distribution of native nematodes is potentially important for future invasive woodwasp management.]

6:30-9:30 Banquet (Camellia/Azalea)

Thursday, July 22nd

Breakfast on your own

8:30-10:00AM **Concurrent Session 1**

A. Hemlock Woolly Adelgid (Magnolia) – Scott Salom and Robert Jetton
    a. Ongoing and future activities regarding biological and chemical control of HWA. Ashley Lamb and Scott Salom
    b. The interactions of woolly Adelgids and their hosts: Potential for host resistance and restoration. Fred Hain and Kelly Oten
    c. Hemlock gene conservation, breeding, and restoration: Preparing for the future. Robert Jetton, N.C. State University.

B. 2012 Risk Map (Dogwood) – Steve Clarke and Dale Starkey
    a. Strategies for characterizing uncertainty in the National Insect and Disease Risk Map. Frank Koch, Frank Krist, and Frank Sapio

> [**Abstract:** It is generally understood that risk maps, and their underlying risk models, contain uncertainties arising from their inputs as well as the assumptions adopted during their construction. Unfortunately, due to the analytical complexities involved, risk maps and models often do not fully reflect these uncertainties. This is an issue for policy makers and other map users who must make critical management decisions with effectively incomplete information. This presentation will focus on methods for characterizing and representing uncertainties with respect to the National Insect and Disease Risk Map (NIDRM). First, I will outline a brief taxonomy of uncertainty in a risk modeling context. Second, I will discuss how uncertainty is being addressed in the current iteration of the NIDRM (e.g., the "fuzzy" membership functions used to re-scale values of input layers). Then, with illustrative research examples, I will highlight other approaches for analyzing uncertainty in a pest risk modeling context and, in turn, suggest how these approaches might be implemented for future iterations of the NIDRM process.]

    b. Host layers: current maps, update on progress, validation procedures. Risk map: discussion of process and description of variables available for modeling. Frank Sapio
    c. Pests included in next risk map and model development sub-teams. Special pest models. Dale Starkey
    d. Hands-on computer risk-mapping for SPB, EAB, and oak decline. Break-out groups

10:00-10:30AM Break

10:30-12:00PM **Concurrent Session 2**

A. Siricid Woodwasp (Dogwood) – Kamal Gandhi
   a. Detection and ecology of *Sirex noctilio*. Matt Ayres
   b. Chemical ecology of the woodwasp *Sirex noctilio*. Katalin Böröczky, Damon J. Crook, Kelley E. Zylstra, Victor C. Mastro, and James H. Tumlinson

[**Abstract:** The woodwasp *Sirex noctilio* (Hymenoptera: Siricidae) is a pest of conifers, mainly pine species (Hurley et al. 2007). Female woodwasps carry a fungal symbiont, *Amylostereum aerolatum* which they inoculate their host tree with whenever they probe the wood for suitability or oviposition. A mucous substance is also injected with the fungal arthrospores and it is the combined effect of the mucus and the fungus that eventually overcomes the tree's defenses (Coutts and Dolezal 1969). Once well established in a plantation or stand it is able to kill healthy trees (Morgan and Stewart 1966). The woodwasp has already caused substantial damage in the stands in New York State and Canada (Zylstra et al. 2010) threatening states in the South Eastern US since the abundant pine species there are known to have suffered massive attacks on other continents (Hurley et al. 2007). Therefore it has become crucial to improve early-detection techniques. The most efficient trapping methods apply mechanically or chemically girdled trees as lures; however, there is a need to develop better chemical lures to avoid using herbicide and killing trees. We have been investigating semiochemicals that mediate mate finding and host seeking behaviors of the woodwasp with the purpose of possibly formulating them as lures. We discovered three components of the female cuticular lipid layer, (*Z*)-7-heptacosene, (*Z*)-7-nonacosene, and (*Z*)-9-nonacosene, that elicit copulation attempts in males upon antennal contact of the female abdomen (Böröczky et al. 2009). Moreover, Crook et al. (2008) reported on sensilla on the antennae of *S. noctilio* that may specifically detect contact chemical stimuli. It is not likely however that the contact pheromone components would be suitable to attract woodwasps from a long distance. Host volatiles represent a more promising group of compounds for formulations. Although many of the typical pine resin components elicit an electrophysiological response in the antenna of *S. noctilio* (Simpson 1976), the volatile blends tested so far in the field in the US and South Africa provided low-to-moderate trap captures (Crook et al. 2011). In a field study conducted in 2008-2009 we demonstrated that herbicide treated Scots pines captured more females than herbicide treated white pines. There was a positive correlation between trap catches and volatile emission rates, though qualitative differences in the volatile profiles seem to play a role, as well. Candidate compounds and/or blends need to be tested for biological activity in the future.

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MORGAN, F. D. and STEWART, N. C. 1966. The biology and behaviour of the woodwasp *Sirex noctilio* F. in New Zealand. *Trans. roy. Soc. N. Z., Zool.* 7:195-204.
SIMPSON, R. F. 1976. Bioassay of pine oil components as attractants for *Sirex noctilio* (Hymenoptera: Siricidae) using electroantennogram techniques. *Ent. Exp. & appl*. 19:11-18.
ZYLSTRA, K. E., DODDS, K. J., FRANCESE J.A., and MASTRO, V. C. 2010. *Sirex noctilio* in North America: the effect of stem-injection timing on the attractiveness and suitability of trap trees. *Agr. For. Entomol.* 12:243-250.]

c. Molecular features of the pine response to *Sirex* mucus. Jeffrey Dean and John Michael Bordeaux
d. In pursuit of natural history and natural enemies of Arkansas Siricidae. Larry Galligan, Danielle Keeler, Ace Lynn-Miller, Kevin Dodds and Fred Stephen

B. New developments in chemical and non-traditional insect control tactics (Magnolia) – Brian Strom
   a. Evaluating tree protectants against bark beetles: methods and results. Brian Strom

[**Abstract:** Standard methods for evaluating the effectiveness of tree protectants against bark beetles are resource-intensive and frequently fail to achieve resolution due to a lack of demonstrable beetle pressure. Screening methods are needed to determine whether or not large field evaluations are warranted. In this study, insecticides with previously determined field efficacy for the southern pine beetle were employed to develop screening protocols for new products. In addition, a technical committee was formed and an application developed so that proposals to the Forest Service for product evaluation may be processed using standardized procedures. A small-bolt method was developed for screening prophylactic products with modes of action that prevent host recognition or acceptance. We propose that when this method is used, the following criteria be met prior to more extensive field-testing: a minimum of 4 to 5 small-bolt replicates with a mean number of attacks of two or less or a confidence interval that includes zero. Products relying on modes of action that are not amenable to a small-bolt screening will be evaluated using other methods as per committee recommendations. Products screened so far include synthetic insecticides and two cedar oil products. Bifenthrin, permethrin and carbaryl products were employed to develop the small-bolt criteria previously mentioned. Cedar oil products were not effective at any duration of 30 d or more and only at full-strength, so these products are not being recommended for prophylactic use against bark beetles.]

b. An update on new control options for leafcutting ants, tip moth and invasive pests in Texas. Don Grosman, Bill Upton and Billi Kavanagh

[**Abstract:** The Forest Pest Management Cooperative continues to work toward development of new, safer and more effective control options for forest pests in young pine plantation and urban situations. Two systemic insecticide products, Silvashield™ Forestry Tablets (imidacloprid + fertilizer) and PTM™ (fipronil), were registered in 2006 and 2007, respectively, based on efficacy in reducing pine tip moth damage on loblolly pine for 2+ years and improving tree growth. Use of PTM™ was extended to leaf-cutting ants in 2009 based excellent results when applied to entrance holes within the central nest area. Another systemic product, TREE-äge (emamectin benzoate), currently registered for use on ash against emerald ash borer, is currently being tested in Texas for control of two invasives, the soapberry borer (on western soapberry) and a chalcid wasp (on Afghan pine). Preliminary results are very promising for both insect pests.]

c. Fungicides in managing forest insects - theory and reality. Kier Klepzig and Brian Strom

[**Abstract:** We presented data from several studies examining the efficacy of several non-traditional treatments in preventing or affecting southern pine beetle (SPB) attack and colonization of loblolly pine. Tree injections (via with Mauget injectors) with Bidrin, Metasystox R, Tebuconazole, Imidacloprid, and 4AA all resulted in lower initial attack rates on trees as compared to untreated controls. However, all the trees in the study eventually died, and effects of the injections on level of bluestain within trees were inconsistent. Injection of trees (via pressurized Arborjet injectors) with fungicides (Arbotect, Alamo, Phosphojet) all led to smaller lesions from inoculations with *Ophiostoma minus* (the bluestain fungus associated with SPB. Injections with plant defense elicitors (Messenger, Methyl Jasmonate, Salicylic Acid, Chitosan) all resulted in inconsistent effects on oleoresin flow. In conclusion, Fungicides limited the growth of fungi. Some plant elicitors had some effects on resistance parameters. None appear to be effective as tree protectants. Many are still sold as if they are effective.]

d. The ‘endo’ SPB management with frontalin? Stephen Clarke

[**Abstract:** The use of semiochemicals in SPB management currently is limited to the spring survey. The registered verbenone pouch is not suitable for SPB infestation suppression due to limitations in the number of pouches that can be applied per acre and the high percentage of the (-)-enantiomer. Combining verbenone with other semiochemicals in a push-pull technique may have potential. Increased trap catches from the addition of endo-brevicomin to the standard SPB lure may have application in reducing SPB numbers when population levels are low and just starting to increase. The addition of endo-brevicomin during the spring and fall surveys could also improve our ability to predict SPB population shifts.]

12:00-1:30PM Lunch on your own

1:30-3:00PM	Afternoon Activities
	Frustrana Cup and Frontalis Cup
4:30-6:00PM	Poster Session/Photo Salon (Magnolia/Dogwood) – Laurie Reid

Friday, July 23rd

Breakfast on your own

8:30-10:00AM **Concurrent Session 3**

A. Invasive beetle highlights – ambrosia, red bay, thousand cankers, EAB, etc. (Magnolia) – Bob Rabaglia
    a. Bob Rabaglia: Non-native bark and ambrosia beetles in the southeast
    b. Jim Hanula: Redbay ambrosia beetle and laurel wilt
    c. Tom Coleman: Walnut twig beetle and thousand cankers disease
    d. Phil Bell: Emerald ash borer
    e. Tom Coleman: Goldspotted oak borer

B. Forest health considerations of focused forest management plans. (Dogwood) – Stephen Clarke

[**Session objective:** Forest managers routinely implement forest management plans focused on specific management objectives, such endangered species recovery, biomass production, restoration, SPB prevention. These plans often are designed without consideration of the overall forest health implications, either before or after plan implementation. The purpose of this session is to examine examples of known or potential forest health associated with management plans and discuss methods to incorporate forest health into the process. The session will consist of short presentations followed by ample time for discussion of the issues raised.]

a. Introduction. Stephen Clarke
b. Overview of RCW management objectives and requirements. Susan Miller
c. RCW Management: without forest health input, do we get the bird? Stephen Clarke

[**Abstract:** The red-cockaded woodpecker is an endangered species in the southeastern United States. A recovery plan for the species was implemented in 1979 and revised in 1985. The recovery plan details mandatory forest management guidelines designed to promote stable or increasing RCW populations. Though forest management for RCW has many forest health benefits, there have been negative aspects, including cavity tree loss due to SPB and extensive storm damage within clusters. Can we find middle ground that leads to increased RCW populations and also adequately protects RCW habitat?]

d. What Happens When you Warm a Bug? Reassessing Forest Risk a Under a Changing Climate. Steve McNulty

[**Abstract:** The forest impacts of drought and heat associated with climate change have been studied for decades. As greenhouse gases continue to build in the atmosphere, the severity climate change is

universally projected to increase. However, in addition to these major perturbations, there are increasing examples of how minor environmental stresses associated with climate change are combining to cause significant ecosystem disturbance. There are also an increasing number of examples regarding how traditionally defined healthy ecosystems are more susceptible to these combination of minor stresses than ecosystems that are defined as less healthy by traditional standards (e.g. growth rates, canopy closure, nutrient availability). This talk will present an example of how three seemingly minor environmental stressors (i.e. southern pine beetles, drought, and nitrogen deposition) combined to cause significant stand mortality in a "healthy" spruce/fir forest in western North Carolina, while "less healthy" stands survived. These findings could significantly alter how forest health is defined under a changing climate.]

e. Insects & Diseases of Longleaf Pine in the Context of Longleaf Ecosystem Restoration. Jeffrey Eickwort

[**Abstract:** Restoration and management of the longleaf pine ecosystem are important forestry issues in the southeastern coastal plain of the United States. When compared to other species, longleaf pine is generally regarded as resistant to the "poster children" of southern forest pest management, i.e., the southern pine beetle and fusiform rust. Consequently, little attention has been given to damaging pests of longleaf pine in recent years. This presentation reviews historical elements of longleaf pine/pest interactions and considers what those interactions might look like in a "restored" longleaf pine ecosystem context.]

10:00-10:30 Break

10:30-12:00 Closing Business Meeting (Magnolia)

Exotic pest information collection and analysis (EPICA): plant pest early warning as a safeguarding tool

J. M. Fritz, S. E. Emerine, M. J. Moan, and H. E. Meissner
NCSU Center for Integrated Pest Management, Raleigh, NC

Flight patterns of pine engraver beetles (*Ips* spp.) in the Piedmont Region of Georgia

Kayla A. Brownell[1], Daniel R. Miller[2], Christopher M. Crowe[2], and Kamal J.K. Gandhi[1]
[1] *Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA*
[2] *USDA Forest Service, Southern Research Station, Athens, GA*

[**Abstract:** Bark beetles (Coleoptera: Curculionidae: Scolytinae) have been recognized as economically important forest pests for many years. Seasonal activity of some bark beetles in the southeast U.S. is already known, but not for *Ips* species in particular. Frequent fires (every one to three years) may alter *Ips* beetle phenology in southern stands. This study focuses on three southern pine engraver species (*Ips avulsus* (Eichhoff), *I. grandicollis* (Eichhoff), *I. calligraphus* (Germar)) and their beetle predators. The objectives of this study are: (1) to determine seasonal activity of *Ips* spp. in mixed stands of loblolly and shortleaf pines [*Pinus taeda* (L.) and *P. echinata* (Mill.), respectively] and (2) to determine if fire disturbance through prescribed burning, has any effect on the flight periods and populations of *Ips* beetles and their beetle predators. Our study sites are located in the Piedmont region in Georgia. Lindgren funnel traps were deployed in mid-October 2009, and trap samples are being collected every two weeks for 12 months. To retain consistency between burn plots, each plot was chosen based upon last burn (every three years) and stand thinning date. Four traps were placed along a transect on each plot: one control trap with no baits and three baited traps which were randomly assigned one of the following lure combinations: (1) [(+/-)-Ipsenol, (+/-)-Ipsdienol, lanierone], (2) [(+/-)-Ipsdienol, *cis*-verbenol], and (3) [(+/-)-Ipsenol, (-) α-pinene]. A solution of propylene glycol was used in the collection cups as a preservative and killing agent. Preliminary results indicate that total numbers for all three species dwindled to zero by January 1st, 2009 and began to increase in March 2010. The most abundant species was *I. avulsus*, with a total of 9,580 individuals caught during this period. We will finish sampling in October 2010, create phenology graphs with degree-day accumulation, and provide recommendations about optimal time to sample and manage *Ips* beetles in southern stands.]

Effect of habitat fragmentation of the spatial population genetic structure of southern pine beetle (*Dendroctonus frontalis*)

Solomon G. Hailu, Dr. Kamal M. Ibrahim, Dr. Edward J. Heist, Dr. John D. Reeve
Department of Zoology, Southern Illinois University, Carbondale, IL

[**Abstract:** Southern Pine Beetle (SPB), Dendroctonus frontalis (Zimmerman), is one of the most destructive insect pests of pine trees in Southern United States, Mexico and Central America. There is relatively little information on the effect of habitat fragmentation on the connectivity and the spatial population genetics of SPB. This study therefore, adds to previously generated information by assessing how habitat fragmentation and landscape variables affect the genetic structure of Southern Pine Beetle. Insight of this nature will assist in understanding the temporal and spatial dynamics of SPB infestations. To address this issue, a suite of eight polymorphic DNA microsatellite markers were used to measure SPB movement over a representative range of SPB habitat and non-habitat (matrix). We found a highly significant population differentiation revealing the existence of non panmictic populations. Nonetheless, the populations exhibit a low level of genetic structure. It was supposed that gene flow, wide-range dispersal and recent divergent time could have contributed to the lower level of structure observed. The results revealed the effect of landscape structure and habitat fragmentation on SPB dynamics, particularly the degree to which different populations are connected by dispersal. In addition, this information is crucial for understanding the scale at which natural and anthropogenic

disruptions in continuous forest habitat influence the spread of SPB infestations. Expanding to previous finding, lower genetic differentiation may imply that the populations might respond to treatments in a similar fashion at a bigger scale. Given absolute and relative estimates of matrix permeability to dispersal as discussed in the study, it might be possible to identify likely locations for future SPB infestations. This could improve our pest management system and forecast to possible treat by this native pest hence its positive implication in timber industry is obvious.]

An evaluation of the Southern Pine Beetle Hazard Map

Jenny C. Staeben[1], James Johnson[2], John Nowak[3], Nate Nibbelink[1], Shannon Albeke[1], and Kamal J.K. Gandhi[1]
[1] *Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA*
[2] *Georgia Forestry Commission, Athens, GA*
[3] *USDA Forest Service, Forest Health Protection, Asheville, NC*

[**Abstract:** The southern pine beetle (SPB) is known for epidemic populations that quickly move through the forest landscape, creating "spots" of dead or dying pines. Southern pine beetles attacks all southern yellow pines species and destroys approximately $7,000,000 of timber annually in Georgia. Southern pine beetles kill their host by creating brood galleries within the host's phloem and introducing blue stain fungus into the xylem.

To combat SPB, the USDA-Forest Service has created a hazard map in 2007 that predicts the location and severity of infestations throughout the southeastern United States. The map is multi-criteria GIS-based and identifies host species, host susceptibility and vulnerability, and expected basal area loss due to SPB infestation. However, the validity of this map is unknown. We tested the probability of the 2007 USDA-SPB Hazard Map correctly estimating SPB infestation frequencies across the landscape of Georgia. We used ArcGIS to spatially compare SPB Hazard Map infestation predictions to SPB spots reported to the Georgia Forestry Commission by private landowners from 2004-2008. Our preliminary results indicate the SPB Hazard Map correctly predicts the occurrence of a SPB infestation within Georgia at 79%, SPB absence at 91%, but predicts the correct level of infestation severity 8% of the time. These results are likely due to the somewhat spatial limitation of only using SPB spot data that have been reported by private landowners. In the future, we will integrate SPB spots recorded in the annual USDA-Forest Service SPBIS reports into the analysis and examine infestation as a function of time. This will offer a more complete spatial understanding of where SPB spots have occurred on the Georgia landscape and enable an analysis which takes into account the unpredictable nature of SPB population densities.]

Current understanding of an emergent native oak forest pest: red oak borer outbreak & population crash

Laurel J. Haavik[1], Joshua S. Jones[2], Fred M. Stephen[1]
[1]*Department of Entomology, University of Arkansas, Fayetteville, AR*
[2]*Department of Geosciences, University of Arkansas, Fayetteville, AR*

Ethanol and (-)-alpha-pinene for detecting and monitoring bark and ambrosia beetles in southeastern USA

Daniel R. Miller, Robert J. Rabaglia and Christopher M. Crowe
USDA Forest Service, Southern Research Station, Athens, GA

Attractant kairomone lure blend for the southern pine sawyer, *Monochamus titillator* (Coleoptera: Cerambycidae)

Daniel R. Miller, Chris Asaro, Christopher M. Crowe, James R. Meeker and Donald A. Duerr
USDA Forest Service, Southern Research Station, Athens, GA

Attaching lures to multiple funnel traps: Inside or outside funnels?

Daniel R. Miller, Christopher M. Crowe, Brittany F. Barnes, Kamal J.K. Gandhi and Donald A. Duerr
USDA Forest Service, Southern Research Station, Athens, GA

An assessment of the distribution and biology of native Siricidae and associated hymenopteran parasitoid species in the Southeastern U.S.A.

Brittany F. Barnes[1], Daniel R. Miller[2], Chris Asaro[3], James R. Meeker[4], Wood Johnson[4], and Kamal J.K. Gandhi[1]
[1] *University of Georgia, Athens, GA*
[2] *USDA Forest Service, Southern Research Station, Athens, GA*
[3] *Virginia Department of Forestry, Charlottesville, VA*
[4] *USDA Forest Service, Forest Health Protection, Pineville, LA*

[**Abstract:** The Eurasian woodwasp, *Sirex noctilio* Fabricius (Hymenoptera: Siricidae), is an introduced invasive pest in North America. It has been discovered in New York, Pennsylvania, Michigan, Ontario, and Vermont.

There is a possibility that *S. noctilio* will be introduced to the southeastern U.S. region. With the large number of tree plantations present in the southeast, the invasion by *S. noctilio* may have severe economic and ecological impacts.

Previously biological agents such as nematodes and parasitoids have been used to control *S. noctilio*. In contrast with other *S. noctilio* invaded countries, native species of Siricids and their parasitoids are common in North America. Some species of parasitoids from North America have been used as a biocontrol agent in other countries.

At present, there is little information known about the distribution, ecology, and biology of native siricids and their hymenopteran parasitoids in the southeastern pine ecosystems. We are, therefore, evaluating their regional species complex associated with the southern pine species.

During September-October 2009, sampling plots were established in three states: Georgia, Louisiana, and Virginia. Thirty intercept panel traps were placed in each of the three states. Traps were baited with either: *Sirex* lure alone, *Sirex* Lure + ethanol, or unbaited. In Georgia 30 funnel traps were additionally used with identical lures. Trap logs were created in each state in order to capture native siricids and parasitoids. All trap trees have been placed in emergence cages in Louisiana and Georgia and emergences are being collected and identified.

Preliminary results indicate that about 79 siricids were caught in the traps representing five species: *Sirex edwardsii* (Brullé), *Sirex nigricornis* (Fabricius), *Urocerus cressoni* (Norton), *Tremex colomba* (Linnaeus), and *Eriotremex formosanus* (Matsumura). The majority of siricids were caught in Virginia that also had all the five siricid species. There was no significant difference in catches between *Sirex* lure alone, and Sirex lure + UHR ethanol. More siricids were caught in the funnel than in the intercept traps in Georgia, but the difference was not significant.]

Effects of beetle predator species on hemlock woolly adelgid in the southern Appalachian Mountains of Georgia, USA

Angela M. Mech[1], J. Rusty Rhea[2], James L. Hanula[3] & Kamal J.K. Gandhi[1]
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The Exotic Wood Borer/Bark Beetle National Survey: A key survey of the Cooperative Agricultural Pest Survey Program (CAPS)

Lisa D. Jackson and Talitha Price
USDA Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Center for Plant Health Science and Technology, Raleigh, NC

[**Abstract:** The Exotic Wood Borer/Bark Beetle National Survey is a key survey of the Cooperative Agricultural Pest Survey (CAPS) program. Target species of the survey were selected by the national committee of the CAPS program in cooperation with the USDA Forest Service. Target species are either exotic pests that are not known to occur in the United States or non-native pests with limited distribution. Surveys are planned and coordinated through each Plant Protection and Quarantine (PPQ) State Plant Health Director's office and state cooperators (state departments of agriculture).

The goals of the national survey are to obtain information about: 1) the presence, distribution, or absence of the target species; 2) the distribution of additional exotic wood borer and bark beetle species; 3) patterns of distribution throughout the United States and possible pathways for introduction of target and other exotic wood borer and bark beetle species; and 4) the phenology of target species in the United States and their selection of hosts.

PPQ would like to use the most effective, specific survey methods to survey for these targets. PPQ encourages communication between researchers in the forest entomology and forest pathology communities to share: 1) recommendations of target pests to include in surveys, 2) information on the development and/ or improvement of attractants, and 3) adaptations and improvements to traps.]

Preliminary PCR analysis of gut contents in *Thanasimus dubius* (Cleridae)

Ryann Campbell[1], David Cross[1], Mike Caprio[1], Andy Londo[2], Jeremy Allison[3], Erich Scholler[3], John Riggins[1]
[1] *Department of Entomology & Plant Pathology, Mississippi State University, Mississippi State, MS*
[2] *Department of Forestry, Mississippi State University, Mississippi State, MS*
[3] *Department of Entomology, Louisiana State University, Baton Rouge, LA*

[**Abstract:** The checkered clerid beetle, *Thanasimus dubius* (Fabricius), is a bark beetle predator that utilizes frontalin, a major component of the southern pine beetle (SPB) pheromone complex, to locate prey. *Thanasimus dubius* preference for frontalin may be due to a prey preference for the SPB over other closely related bark beetle prey species. However, little is known about whether *T. dubius* preferentially feeds on SPB over other bark beetle species when all are present in the same tree. This study will use a polymerase chain reaction (PCR) technique to aid in determining if *T. dubius* has a feeding preference for SPB in the presence of multiple bark beetle prey species. Primers have been designed and are currently being optimized for *T. dubius* and common prey members of the southern pine bark beetle guild (*Dendroctonus frontalis, D. terebrans, Ips avulsus, I. grandicollis,* and *I. calligraphus*) to use genetic polymorphisms to distinguish each species. Subsequent PCR analysis of clerid beetle gut contents will allow us to determine clerid beetle feeding preference when the predator is presented with a choice between multiple bark beetle species in varying degrees of abundance. Completion of this PCR analysis will also allow future testing in the field for predatory preference of *T. dubius* among the five southern pine bark beetles.

Approved for publication as Journal Article No. J-11929 of the Mississippi Agricultural and Forestry Experiment Station, Mississippi State University.]

Bark beetle and subterranean termite interactions: implications for forest utilization

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[**Abstract:** Subterranean termites are important in forest succession primarily from a decomposition standpoint. Little research has been conducted to describe the interactions between termites and bark beetles. Early colonization of bark beetle-killed trees by subterranean termites could alter forest succession in localized areas. A series of AWPA E1-09 "choice tests" were employed to determine the feeding preference of *R. flavipes* for: 1) kiln dried southern yellow pine (SYP) sapwood with blue-stain versus unstained kiln-dried SYP sapwood, 2) air-dried SYP sapwood with blue stain versus unstained air-dried SYP sapwood, 3) kiln-dried SYP sapwood treated with a 0.02% solution of frontalin, the major component of the female southern pine beetle (SPB) pheromone, versus kiln-dried SYP sapwood, 4) kiln-dried SYP sapwood treated with a 0.02% solution of *endo*-brevicomin, the major component of the male SPB pheromone, versus kiln-dried SYP sapwood, and 5) all possible combinations of air-dried blue stained sapwood and frontalin and *endo*-brevicomin versus clear air-dried SYP sapwood. Results indicate a feeding preference for both air-dried and kiln-dried blue-stained wood, unstained wood treated with frontalin, and air-dried blue-stained wood treated with a 0.02% solution of both frontalin and *endo*-brevicomin. The implications of this previously unknown interaction are far reaching in a wide array of disciplines such as forest health, ecology, and utilization.

Approved for publication as journal article No. J-11931 of the Mississippi Agricultural and Forestry Experiment Station, Mississippi State University.]

An assessment of two insecticides for the protection of loblolly pines from subcortical insects

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[1] *Daniel B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA*
[2] *Southern Research Station, USDA Forest Service, Athens, GA*

[**Abstract:** We tested two insecticides with differing modes of action (Carbaryl and Bifenthrin) for the protection of loblolly pine *(Pinus taeda* L.) from sub-cortical insects in Georgia, specifically bark beetles (Scolytinae) and woodboring beetles (Cerambycidae and Buprestidae). Two different window trap designs (single- and double-paned) and two trapping heights were also evaluated for effectiveness. Trees were girdled and baited for *Ips* spp. (ipsenol and ipsdienol), and traps were installed to test designs and heights and monitor colonization pressure. Colonization evidence was collected in the form of entrance and exit holes and the presence of boring dust and frass. The experiment ran from July 2009 to October 2009, and was located at Whitehall Teaching Forest at the University of Georgia. We found that both insecticides greatly reduced successful colonization of the trees, with no significant differences between the two. Trees that were treated with insecticide showed little to no damage, and those that were left untreated showed extensive damage by the end of the experimental period. Double-paned window traps were slightly more effective than single-paned traps, and the species composition in the traps due to trapping height mirrored spatial partitioning on the boles of trees by bark beetles in these systems.]

Seasonal effects of first commercial thinning on *Ips* beetle activity in north Mississippi loblolly pine stands

James D. Floyd, Andrew J. Londo, John J. Riggins, and T.E. Nebeker
Department of Forestry Extension, Department of Entomology and Plant Pathology, Mississippi State University, Mississippi State, MS

Recovery of introduced biological control agents on southern hemlocks: so what?

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The University of Tennessee, Knoxville, TN

[**Abstract:** The hemlock woolly adelgid, *Adelges tsugae* Annand (Hemiptera: Adelgidae) (native to Japan), currently threatens the health and survival of eastern hemlock, *Tsuga canadensis* (L.) Carrière, and its ecosystems in the eastern United States. Tremendous mortality of hemlock has been observed recently in the southern Appalachians, where biological control has been an integral part of the management plan against the adelgid. More than 500,000 predatory beetles [mainly *Sasajiscymnus tsugae* (Sasaji and McClure) (Coleoptera: Coccinellidae) but also *Laricobius nigrinus* Fender (Coleoptera: Derodontidae)] have been released on hemlock at numerous sites throughout the Great Smoky Mountains National Park (GRSM) in the southern Appalachians since 2002. A study is underway to conduct extensive follow-up data collections to assess these releases and document recovery. As of 2010, *S. tsugae* adults and/or larvae have been recovered from about 20% of the release sites sampled. Beetles have been recovered – so what if introduced predators are recovered? What does it mean? What types of information can or cannot be gleaned from these types of studies.

WHAT DO WE LEARN FROM RECOVERIES? Recovery data provide important insight into biological control programs. This information is critical to long-term, successful integration of biological control into management programs. Examples of important information gained from recovery data include: 1) Presence of predators, 2) Establishment, 3) Presence and establishment of species complexes of natural enemies, 4) Local, regional, and national distribution, 5) Spatial distribution/dispersion in tree canopy, 6) Seasonality, 7) Density, and 8) Alternate hosts.

WHAT DO WE NOT LEARN FROM RECOVERIES? Although recovery data for introduced natural enemies can provide important, but limited, insight into biological control programs, those data cannot provide much knowledge on other necessary assessments of this complex system. Examples of important information not gained from recovery data include: 1) Impact on hemlock growth, tree health, and tree survival, 2) Impact on adelgid populations, and 3) Future survival of hemlocks.

Recovery data provide valuable information just in answering the questions "Is it there?, Is it established?, How is it distributed?" However, recovery data do not answer the questions "What is it doing?" and "How many predators are needed?" Recovery data, however, combined with a more extensive analysis of tree health and other tree characteristics, as well as characteristics of the hemlock woolly adelgid population, would provide a more thorough understanding of the impact of these introduced predatory beetles on hemlock woolly adelgid and tree health. Impact assessments are a lengthy process and should be pursued to enable scientists and land managers to better use biological control agents to improve hemlock health.]

Cicadas in the midst: a glimpse of the 17-year periodical cicada in a mixed stand of eastern hemlock.

Gregory J. Wiggins, Abdul Hakeem, Renee Follum, Jerome F. Grant, and Paris L. Lambdin
The University of Tennessee, Knoxville, TN

[**Abstract:** The initial stage of an emergence of Brood XIV of the 17-year periodical cicada was evaluated by counting emergence holes and adults in cages containing eastern hemlock trees. These mature hemlock trees were enclosed in cages (ca. 8.26 m tall, 6.35 m basal diameter, made of lightweight Nylon netting) to study the establishment of introduced predatory beetles and their impact on hemlock woolly adelgid (for more information on tree cage study, see the related Abstract 'Predatory Beetles Unite! Multiple Introduced Species Coexist on Eastern Hemlock' by Hakeem et al. in this Proceedings). Although no cicadas were observed on 1 May 2008, on 5 May 2008, adult cicadas were first documented. Counts of emergence holes and adult cicadas were made within the 12 tree cages on 12 May 2008 to estimate density of cicadas over the seven- to 10-day period. Adult cicadas were found in 11 cages, and emergence holes were documented in all 12 cages. The average number of emergence holes and adult cicadas per cage were 13.50 and 16.33, respectively. Based on the basal diameter of the cage, periodical cicadas averaged ca. 0.14 emergence holes and 0.16 adults/square meter or ca. 1,600 cicadas per hectare. When compared to other studies, the densities reported here are relatively low; however, these counts were conducted only during the initial stage of emergence. Thus, the total emergence would have been much greater. In addition, studies of cicada emergences in other areas found that fewer cicadas are associated with conifer-dominated stands (pines, hemlock, etc.) compared to hardwood-dominated stands. Because only cicadas associated with eastern hemlock were counted, there may have been many more emerge from underneath adjacent hardwood species. Future emergences of other broods could be more closely monitored to fully estimate cicada populations and associations with host species.]

Predatory beetles unite! Multiple introduced species coexist on eastern hemlock.

Abdul Hakeem [1], Jerome F. Grant[1], Gregory J. Wiggins[1], Rusty Rhea[2], and Paris L. Lambdin[1]
[1] *The University of Tennessee, Knoxville, TN*
[2]*USDA Forest Service, Forest Health Protection, Asheville, NC*

[**Abstract:** Hemlock woolly adelgid (HWA), *Adelges tsugae* Annand (Hemiptera: Adelgidae), has devastating effects on eastern hemlock, *Tsuga canadensis* (L.) Carrière. Despite the more than 500,000 adult *Sasajiscymnus tsugae* (Sasaji and McClure) (Coleoptera: Coccinellidae) and more than 7,000 adult *Laricobius nigrinus* Fender (Coleoptera: Derodontidae) released on eastern hemlock in the Great Smoky Mountains National Park (GRSM), few records exist of these species establishing or co-occurring on the same trees. The purpose of this study was to assess establishment of these introduced predatory beetles after removal of whole-tree enclosures from eastern hemlock. In Blount County, Tennessee, 12 eastern hemlock trees were caged using whole-tree enclosures (ca. 8.26 m tall and 6.35 m basal diameter, made of lightweight Nylon netting) from October through December 2007. Between December 2007 and March 2008, *L. nigrinus*, *S. tsugae*, and *Scymnus sinuanodulus* Yu and Yao were released onto hemlock trees within the cages. In July 2009, cages were removed from trees and weekly beat-sheet sampling was initiated in January 2010 and continued through July 2010 to assess the establishment of predatory beetles. Adults and larvae of *L. nigrinus* and *S. tsugae* were recovered in beat-sheet samples and were observed coexisting on four of the trees. No *S. sinuanodulus* were recovered, and this species may not have established during this study. However, a native predator species, *Laricobius rubidus* (LeConte) was found in beat-sheet samples from one tree from which *L. nigrinus* and *S. tsugae* were recovered. Both *L. nigrinus* and *S. tsugae* dispersed throughout the site and were found on non-release trees within two years following releases. Many of the recoveries of *S. tsugae* in GRSM have been within 5-7 years after releases. Therefore, the whole-tree cages may have discouraged dispersal of *S. tsugae*, thereby improving its ability to find food and potential mates. These findings indicate that whole-tree cages may be used to enhance efficiency of introduced predators by acclimatizing them to the field conditions and aiding in establishment.]

Evaluation of stem-injected emamectin benzoate for protection of western white pine from the mountain pine beetle in California

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[1]*USDA Forest Service, Southern Research Station, Pineville, LA*
[2]*USDA Forest Service, Region 5 Forest Health Protection, Vallejo, CA*
[3]*USDA Forest Service, Southern Research Station, Auburn, AL*

[**Abstract:** Efficacious treatments for protection of individual pines from bark beetles are limited to insecticides sprayed onto tree boles. Alternative treatments such as systemic insecticides have not been successful against bark beetles historically, but new formulations and active ingredients have shown some promise. Among these, TREE-äge (Syngenta, Inc., AI = emamectin benzoate, EB), is most notable and trials are underway to evaluate its potential for protecting individual trees against bark beetles.

In this study we stem-injected western white pines with EB (TREE-äge formulation) on the Modoc National Forest in northeastern California. The study had three objectives: (1) to evaluate the efficacy of TREE-äge as an individual tree protectant for western white pine against the mountain pine beetle (MPB); (2) to evaluate bole utilization of TREE-äge treated trees by MPB, and, (3) to determine residual concentrations of EB in phloem of trees treated with TREE-äge. Trees were injected at their root collar in September 2007 using the Arborjet Tree IV system at a rate of 0.4 g EB per inch of tree diameter at breast height. Pine mortality from MPB had recently been extensive in the area, providing ample populations for a successful evaluation (i.e., sufficient mortality of control trees) of the EB product.

Study trees (n = 10 per treatment) were injected in September 2007, baited with semiochemical attractants during MPB flight in 2008, and evaluated in 2009. Treatments with TREE-äge were not effective for protecting western white pines from the MPB. Of the 10 trees treated, 9 were attacked by MPB and killed, while 10 of 10 untreated trees were killed. Bole utilization of treated trees by MPB was less successful in treated trees, with the number of adult emergence holes, number of adult galleries, and length of adult galleries being significantly reduced compared with untreated trees. Evaluation of EB residues in phloem samples collected at

10 and 22 months post-treatment are continuing, but completed samples show residues ranging from 0 to 2.4 ug/g dry tissue weight. Ongoing studies are evaluating whether an increase in the number of injection points will improve performance of TREE-äge for protecting western white pines from MPB; however, this treatment cannot be recommended at this time.]

Spatial and temporal distribution of imidacloprid and its metabolites, 5-hydroxy-imidacloprid and olefin-imidaclopid in eastern hemlocks in the southern Appalachians

C. I. Dilling[1], P. L. Lambdin[1], J. F. Grant[1], and R. Rhea[2]
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An analysis of the influences of forest fragmentation on southern pine beetle

Zachary E Arcaro[1,] Frank H Koch[2,] Fred P Hain[1]
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Starting off in process control and quality control systems in predator rearing programs

Allen C. Cohen[1], Fred Hain[1], Carole Cheah[2], Thom Hodgson[1], Kathleen Kidd[3]
[1]*North Carolina State University, Raleigh, NC*
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Beyond book learning in natural resources: cultivating pedagogy of service-learning through local and international partnerships

Kimberly F. Wallin[1,2], Kimberly DePasquale[1], Sarah Pears[1], Susan Leff[3], and Byron Murray[4]
[1] *University of Vermont, Rubenstein School of Environment and Natural Resources*
[2] *USFS, South Burlington, VT*
[3] *Executive Director, Hillel at University of Vermont*
[4] *Former Director, Israel Center, Fellowship through the Menachem Begin Center*

[**Abstract:** Many students enrolled in American educational institutions participate in school-based services designed to benefit both the community and the students. Some educators define these activities as community service, while others use the term service-learning. Service-learning typically has more rigorous and complex set of criteria than community service. Both are based on criterion of a service experience that is both personally meaningful and beneficial to the community. This is widely accepted, but service-learning is often distinguished from community service by requiring some or all of the following: 1) Clearly identified learning objectives based on classroom instruction and community project(s); 2) student participation in selecting and/or designing the service activity; 3) critical reflection; 4) assessing educational outcomes; and 5) a theoretical base in education. Here we discuss a domestic and an international service-learning course offered at UVM.

The UVM Course entitled Forest Ecosystem Health has the community partner of the State of Vermont Department of Forests, Parks, and Recreation. Students conduct survey services on pre-designated high use private campgrounds sites in VT**.** The focus, to-date, is on signs and symptoms of Asian Longhorn Beetle, Emerald Ash Borer, Hemlock Woolly Adelgid, and *Sirex noctilio*. Critical reflection is vital for successful student and community partner experiences and outcomes. Here are 3 examples of reflection questions: 1) Discuss the role that invasive species survey and control plays in conservation efforts. 2) What skills are you learning as a result of your participation in the ALB/EAB survey? and 3) How will this survey experience apply

in your professional career? Outcomes And Outputs: This year we were funded by ARRA to survey Vermont for non-native invasive species (NNIS). A crew of 16 (4 students from class) surveyed designated high use public recreation sites in the USDA Forest Service Green Mountain National Forest and in State Parks in VT. The survey focused on looking for signs and symptoms of ALB, EAB, HWA and Sirex and on 34 terrestrial and riparian plants from the "Class B" portion of the VT Quarantine list, 1 species from the Federal Noxious Weed list, and all terrestrial and riparian plants from the State Watch. The survey covered approximately 2300 acres from June-September 2010.

The international service-learning course is entitled: Arid Ecosystems, Communities, and Expression. The course community partners in Arad, Israel include: Desert Vision, Al Fura School, Chabad Schools, Athletic Association, and in Negev: Arava Institute for Environmental Studies. The service-learning projects raise the awareness of students' connection environmental and social justice issues, specifically in Arad and the surrounding Bedouin communities through the construction of Eco-gardens. Students and practitioners in environmental fields work toward understanding the complex context in which environmental decision-making takes place. Examples of critical reflection questions: 1) How does your personal relationship with the natural world relate to what you learned and experienced at Eco-Israel today? 2) Talk about your experience at the Chabad School. How was it different from other service activities you have been involved with in the past? 3) What did you perceive the power and privilege dynamics to be at the Bedouin School? How is this different than at the Chabad School? How is it different from the middle school you attended?

The outcomes and outputs include developing a program in Trans-boundary Arid Ecosystem Studies with Arava Institute. Student's participation in *Peace Building and Environmental Leadership Seminar* as partially fulfill UVM diversity requirement. Because environmental and natural resource problems are thoroughly intertwined with issues of equity and social justice, we will continue to aggressively expand our environmental agenda to include the pressing concerns of diverse peoples.]

Niche overlap among fungal associates of native and non-native insects in North American pine species

Sarah L. Pears[1] and Kimberly F. Wallin[1,2]
[1] *University of Vermont, Rubenstein School of Environment and Natural Resources*
[2] *USFS, South Burlington, VT*

[**Abstract:** North American trees are hosts to a number of herbivorous insects, including native species (e.g. *Dendroctonus ponderosae* Hopkins), and a growing number of non-native species (e.g. *Agrilus planipennis* Fairmaire, *Anoplophora glabripennis* Motschulsky). A recent review suggests that research into the ecological impacts of invasive insects in just beginning; however, of the cases that have been studied, invasive forest insects, especially Eurasian species introduced to North America, have been best documented. In general, the direct and indirect interactions between native and introduced insects that utilize a common resource are poorly understood. However, these interactions may be important in determining which non-native species become established and spread as invasives in their new habitats, in addition to the presence of suitable hosts, climate, lack of natural enemies, and adequate number to build and support sustainable populations. Here we discuss the interactions of *Sirex noctilio* and *Ips* spp. in two North American pines.]

Host resistance screening for balsam woolly adelgid: early response from 12 fir species

Leslie Newton[1], Fred Hain[1], John Frampton[2]
[1]*Department of Entomology*
[2]*Department of Forestry and Environmental Resources*

Thousand cankers pathway assessment: *Geosmithia* sp. and *Pityophthorus juglandis* movement from the western into the eastern United States

Leslie Newton[1], Glenn Fowler[1], Alison Neeley[1], Robert Schall[1], Yu Takeuchi[1], Scott Pfister[2]
[1]*USDA APHIS PPQ CPHST Plant Epidemiology and Risk Analysis Laboratory, Raleigh, NC*
[2]*USDA APHIS PPQ Emergency and Domestic Programs, Riverdale, MD*

[**Abstract:** Walnut mortality was first reported in Oregon and Utah in the early 1990s and by 2003 widespread mortality was reported in New Mexico and Colorado. Thousand cankers disease, caused by a fungal pathogen (*Geosmithia morbida*) and its insect vector, the walnut twig beetle (*Pityophthorus juglandis*), was identified in 2007 and has been rapidly spreading in western states. The common name for the disease is 'thousand cankers' due to the coalescing cankers surrounding multiple beetle entry points on twigs, branches, and main stems. The pathogen is not systemic. Eastern black walnut (*Juglans nigra*), planted throughout the west, is highly susceptible to the disease. Our objectives were to identify potential pathways of movement from the west into the east, to identify potential alternate vectors, and to characterize the risk to the east. Pathways for the movement of thousand cankers disease include timber (logs, burls, branches/roots for woodworking), firewood, wood packaging material, nursery stock, scion wood for grafting, and natural spread. There is little commercial movement of walnut from the western states into the east, but it does occur. Undocumented movement of walnut (logs, burls, roots) by woodworkers and hobbyists frequently occurs. Utilizing a GIS-based approach based on extant information, we characterized the approach rate as being low but consistent. Specifically, the beetle/pathogen complex is likely to enter the east gradually and in relatively low quantities with each entrance event. Raw wood is the most critical pathway. Potential alternate vectors include bark and ambrosia beetles, specifically *Pityophthorus lautus*, *Xylosandrus germanus*, *Xyleborinus saxesenii*, and *Xyleborus ferrugineus*. If thousand cankers disease becomes established in the east, the native range of this economically and ecologically important species may be at risk. Loss of black walnut and the presence of this disease will affect timber and nut industries, furniture manufacturing and production, recreation, nursery stock production, homeowners, and ecosystems.]

ForestryImages: from the 2001 SFIWC photo archive to now

G. Keith Douce, C.T. Bargeron, D.J. Moorhead and J.H. LaForest.
Center for Invasive Species & Ecosystem Health, University of Georgia, Tifton, GA

Minutes of the Opening Business Meeting
Wednesday, July 21, 2010

Hilton Wilmington Riverside
Wilmington, North Carolina

Chairman Bud Mayfield called the 53rd meeting of the Southern Forest Insect Work Conference to order at 8:30 AM. He welcomed everyone to the meeting and thanked John Nowak, Kier Klepzig, Fred Stephen, and Will Shepherd for organizing the event. Kier Klepzig, Program Chair, introduced Dr. Alan Lucier, Senior Scientist at the National Council for Air and Stream Improvement (NCASI), who gave a presentation on forest management in the changing environment. He discussed how climate change and population growth present unique challenges to the forestry industry, while emerging technologies offer enormous opportunities for improving forest management strategies. Marking the opening of the formal business meeting, Chairman Mayfield asked first-time attendees to stand and introduce themselves. John Nowak, Local Arrangements Chair, provided information on the hotel, nearby restaurants, and Wilmington attractions. As Program Co-Chair, Kier Klepzig announced the availability of the 2010 SFIWC program at the registration table and asked speakers to inform session moderators about any changes to the program. The group then paused for a moment of silence in remembrance of Dr. Peter L. Lorio, longtime Forest Service scientist, SFIWC member, and 2003 A.D. Hopkins Award winner, who passed away earlier this year. Chairman Mayfield announced that the SFIWC Executive Committee decided to donate $100.00 to the Alzheimer's Association in Pete's memory. Steve Clarke explained the details of SFIWC's first annual food drive and asked everyone to participate if possible. Bob Coulson asked anyone who was interested in the 2010 Frontalis Cup at the Echo Farms golf course to see him, and Steve Clarke invited the membership to meet at 1:30 pm at the Tavern on 2nd Street for the Frustrana Cup cornhole tournament. Steve also thanked everyone who donated forestry supplies to the Peace Corps in Mexico. When Chairman Mayfield requested information on retirements or transitions, he announced his own new position as a scientist for U.S. Forest Service SRS-4552: Insects, Diseases, and Invasive Plants, specializing in hemlock wooly adelgid research.

Reports

Secretary-Treasurer Will Shepherd reported that minutes of the 2009 meeting in Gulfport, Mississippi are available in the Proceedings on the SFIWC website. Financially, income for the Gulfport meeting exceeded expenses by $2695.79, leaving a balance of $6038.74 in the checking account on 12/31/09. CFE credits will be emailed to those requesting them after the meeting.

Ron Billings read the Historian's Report (see attached) with highlights of the four meetings previously held in North Carolina.

Alex Mangini (not present) submitted the Common Names Committee Report (see attached).

History Committee – No report.

Photo Salon – Laurie Reid asked that anyone who has not yet submitted their pictures for the Photo Salon get them to her by noon. She also called for four volunteers to be judges.

Resolutions – Fred Hain reported that there are no resolutions pending at this time. He explained the resolution process and reminded everyone that there are three resolutions currently on the SFIWC website.

Website – Keith Douce (not present) submitted the Website Report, which stated that the site received 27,400 hits and served 11,411 pages of information to 7,733 unique users in 2009 (down 15% from previous years). Most of the website use was for meeting information. Planned for the upcoming year is a link to the SFIWC Image Archive that is available on the Forestry Images website. Any material for the website should be submitted to Will Shepherd.

Theses and Dissertations – David Kulhavy reported that links to electronic versions of theses and dissertations will be placed on the SFIWC website. He also gave information on a soon-to-be-published insect alphabet book with wood block prints.

Chairman Mayfield began a discussion on holding a SFWIC in 2011, the same year as the North American Forest Insect Work Conference (NAFIWC) in Portland, OR. He noted that the results of an informal email poll indicted 58% of the membership was against meeting in the same year, with most of those supporting a 2011 meeting working for state or local governments. Although two same-year SFIWC/NAFIWC meetings have occurred in the past, there is no current standard policy, and the Executive Committee was working under the assumption that no SFIWC would be held in 2011.

Ron Billings moved that SFIWC not meet in 2011 and instead focus on NAFIWC; Rusty Rhea seconded. Several members expressed concerns that it would be difficult for some people to travel to Portland. Others expressed the need to fully support NAFIWC by not holding a same-year meeting, as a lot of effort and planning has been expended on NAFIWC. Regional meetings in 2011 could pick up some who would not be able to attend NAFIWC. A SFIWC business meeting will be held at NAFIWC if there is no full SFIWC in 2011. The motion passed.

Chairman Mayfield announced that after sending a formal invitation to the Southwide Forest Disease Workshop (SWFDW), its membership has expressed interest in holding a joint meeting with SFIWC in 2012. He emphasized that a lot of details remain to be worked out.

Kier Klepzig moved to meet jointly with SWFDW in 2012. The meeting would occur at the same time of year that SFIWC generally meets. SWFDW has 60-70 members with some overlap with SFIWC membership. The two groups' agendas would be integrated with the possibility of additional concurrent sessions, but an extra day would not be added to the current meeting length. The motion passed.

New Business

Nominations – A new Counselor is needed to replace John Nowak for a three-year term on the Executive Committee. Also, the membership must choose a Chair Elect to replace Bud Mayfield as Chairman after the 2012 meeting. Voting on nominees will be held during the closing business meeting. Contact John Nowak (for the Counselor position) or Bud Mayfield (for the Chair Elect position) if you wish to submit a nomination.

Chairman Mayfield also called for nominations for 2012 SFIWC Program and Local Arrangement Chairs.

Rusty Rhea encouraged members to attend the Hemlock Wooly Adelgid Symposium, August 17-19, 2010 in Asheville, NC.

R. F. Anderson Award – Fred Hain announced that Robert Jetton (North Carolina State University) won the award in 2009 (due to a communication error, the award was not presented at the 2009 SFIWC). He thanked committee members Jeremy Allison, Keith Douce, Frank Koch, and Alex Mangini for their work in selecting the 2010 winner – Laurel Haavik, a Ph.D. student of Fred Stephen at the University of Arkansas. Laurel received a check for $250.00 and will be presented with a plaque after the meeting.

A.D. Hopkins Award – Jim Hanula thanked committee members Chris Asaro, Kamal Gandhi, John Nowak, Bob Rabaglia, Will Shepherd, and Fred Stephen. He reported that Kier Klepzig was awarded this year's A.D. Hopkins Award. A framed picture and letter will be presented to Kier. Jim told the group that after the presentation to Kier, we will have no more framed pictures and should look into making some new ones.

Announcements – Ron Billings told everyone that group pictures would be taken outside during the morning break.

There being no further business, the opening business meeting adjourned at 9:52 am.

Minutes of the Closing Business Meeting
Friday, July 23, 2010

Hilton Wilmington Riverside
Wilmington, North Carolina

Chairman Bud Mayfield called the meeting to order at 10:31 am.

Old Business

Election of Officers – John Nowak submitted Jeff Eickwort and Jason Moan as candidates for Counselor, 2010-2014. With no further nominations, the members voted, and Jason Moan was elected Counselor.

Chairman Mayfield submitted Don Grosman as candidate for Chair Elect, 2010-2012. With no further nominations, the members elected Don by acclimation. Don will become SFIWC Chairman in 2012.

Laurie Reid announced the 2010 Photo Salon winners and thanked the judges (see attached). A total of 100 pictures from 14 photographers were submitted. The pictures will be forwarded to the Bugwood website. In 2012, the Photo Salon will be held during the Wednesday night banquet.

Frontalis Cup – Fred Stephen reported that five players participated, and Bob Coulson won the Cup on Thursday afternoon.

Frustrana Cup – Steve Clarke reported that 30 players participated, and the team consisting of himself and Doug Streett won the cornhole tournament on Thursday afternoon.

1st Annual SFIWC Food Drive – Steve Clarke thanked everyone for their donations, which totaled 65 lbs. and $309.00.

Meeting site for 2012 – Invitations to host the 54th SFIWC in 2012 were received from Chris Asaro (Charlottesville), Andy Londo (Memphis), and Tim Haley (New Orleans). The Executive Committee will decide on the location after additional information on costs and feasibility is gathered.

Program Chair for 2012 – Bud Mayfield reported that Lynne Rieske-Kinney volunteered to be the Program Chair for the 54th SFIWC.

There was general discussion on obtaining new A.D. Hopkins Award frames. It was decided that the Executive Committee would discuss options with Jim Hanula and get wood prices.

New Business

Dave Kulhavy moved to give out the R.F. Anderson Award at the 2011 NAFIWC. Fred Stephen seconded. The motion passed.

There being no further business, Chairman Mayfield again thanked this year's officers and others who contributed to the 53rd SFIWC and asked the Executive Committee members to meet for a short time following the closing business meeting.

Meeting adjourned at 10:52 am.

Respectfully submitted,

William P. Shepherd, Secretary-Treasurer

Financial Report, CY 2010

SFIWC Income & Expenditures
January 1, 2010 – December 31, 2010

Balance on hand, 1/1/10		$6,038.74
Income		
Registration and Banquet fees		$16,400.00
Available Funds		$22,438.74
Expenses		
2010 Meeting	$14,773.34	
Awards & Administration	$548.05	
Total Expenses		$15,321.39
Balance on hand, 12/31/10		$7,117.35

Historian's Report
53rd SFIWC
Wilmington, North Carolina

This is the 53rd Southern Forest Insect Work Conference and the fifth time the SFIWC has met in the State of North Carolina since the Conference began in 1956 (actually the sixth time, if you include the North American Forest Insect Work Conference that many members attended in Asheville, in 2006). The first meeting in NC, our 8th annual conference, was held in Raleigh on August 27-28, 1963. Attendance was 72. L.O. Warren of the University of Arkansas served as Chairman and E.A. Osgood, Jr. with the Southeast Forest Experiment Station was Program Chair. Workshop topics included entomological training, bark beetle ecology and behavior, tip moth ecology and behavior, and chemosterilants and attractants. The conference considered an invitation to join with the Western Forest Insect Work Conference and the International Forest Insect Conference during a joint meeting to be held in Denver, CO in 1965. The invitation was ultimately declined, due to travel costs. A committee to develop and standardize survey methods for hardwood defoliators was appointed by the Chairman, to be headed up by Virginia State Pest Specialist Cal Morris.

It would be another 22 years before the Conference returned to North Carolina. In 1985, the 30th SFIWC was held at the Smokey Mountains Inn on the Plaza in Asheville on July 29 to August 1. Ron Billings, Texas Forest Service, was Chairman and Julie Weatherby, US Forest Service, served as Program Chair. Total attendance was 99, but only 67 showed up in the group photos. A panel discussion was held on "Theories Concerning Acid Rain, moderated by Fred Hain. Topics of workshops included gypsy moth, pinewood nematodes, SPB in wilderness, and pest management computer models. Conferees toured the Biltmore House where C. Wayne Berisford of the University of Georgia was announced as the second A.D. Hopkins Award winner. Bob Thatcher, USFS, was awarded the last Ethical Practices Award for allegedly rearranging the lettering of the hotel's street sign to read Welcome: Southern Forest "Incest" Work Conference. The Ethical Practices Award, established in Atlanta in 1972, was discontinued following this meeting.

In 1995, from July 31 to August 3, we celebrated our 40th Conference at the Seatrail Conference Center in Sunset Beach, NC. Fred Stephen, University of Arkansas was Chairman and Stephen Clarke, US Forest Service, was Program Chair at this Conference. There were 106 registered participants. The Conference field trip consisted of a tour of port facilities at nearby Wilmington. Workshop topics included the usual pest issues, including biological control, forest insect suppression and ecosystem management. Fred Hain, North Carolina State University, was awarded the A. D. Hopkins Award. It was at this meeting that Harry O. Yates III announced his retirement from the US Forest Service and his resignation as SFIWC Historian, a position he had held since 1979. His duties as historian were passed on to yours truly.

The SFIWC met again in North Carolina on August 3-6, 1998, back in Asheville. Rich Goyer, Louisiana State University, served as Chairman and Fred Hain was Program Chair for this 42nd annual conference. There were 105 participants, including 14 students and 4 retirees. Keynote speaker was Larry Tombaugh, Dean, College of Forest Resources, North Carolina State University, who spoke on "Where is Forestry Going?" The plenary session entitled "Are Forest Entomologists an Endangered Species?" was addressed by knowledgeable speakers from the university, state and federal perspectives. Workshop topics included alien insects, landscape

ecology and forest entomology, biodiversity studies, and information technology. Evan Nebeker, Mississippi State University, was named winner of the 1998 A.D. Hopkins Award. For the first time, a southern pine beetle research meeting was held just prior to the 1998 Work Conference. A decision was made to hold the SPB Working Group meeting annually in conjunction with the SFIWC. Finally, a committee was formed to improve the quality of data in the annual insect and disease losses report. Don Duerr with USFS/FPM was asked to chair this committee.

In 2006, the SFIWC was not officially held, due to the scheduling of the 4th North American Forest Insect Work Conference, also held in Asheville.

Ronald F. Billings, Historian

July 20, 2010

Common Names Committee Report

The Common Names Committee received no submissions in 2009-2010 and there were none in play during that time. If anyone has a common name proposal or has questions about the common names process, that individual is encouraged to contact Alex Mangini at (318)-473-7296 or amangini@fs.fed.us.

Submitted on 29 June 2010.

/s/ Alex Mangini

Alex Mangini,
Chair, SFIWC Common Names Committee

Photo Salon Awards
2010 SFIWC – Wilmington, North Carolina
Laurie Reid, Organizer

Forest Insects

1st Place Joe Pase – The saltmarsh caterpillar is also called a wooly bear. Lepidoptera: Arctiidae, *Estigmene acrea*, Bee County TX, May 2010

2nd Place Joe Pase – Lubber grasshopper, Orthoptera: Romaleidae, *Romalea microptera*, Nacogdoches County TX, October 2009

Forest Insect Damage

1st Place Brian Heath – HWA killed trees. Linville Gorge, NC

2nd Place Jeff Peterson – Pine colaspis damage: 80 acre 4 year old slash pine plantation (planted in the aftermath of Hurricane Rita)

Other

1st Place Tim Haley – Psocid webbing on oak

2nd Place Wood Johnson – Dragonfly decapitates siricid!

(tie) Jason Moan – Juvenile praying mantis eating lep

Series

1st Place Joe Pase – *Ips* attack Lufkin, TX

2nd Place Charles Johnson & Durwin Carter – Blackheaded pine sawfly damage to loblolly pine

(tie) Erich Vallery – SPB possible pitch-out

Humor

1st Place Andy Boone – How S.C. political scandals begin

2nd Place Andy Londo – Hand of God

Judges: Ron Billings, Jacob Hudson, Wood Johnson, Andy Londo, and Rob Trickel

Officers and Committees, 2009–2010

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53rd Conference, July 2010
Wilmington, North Carolina

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Fred Stephen, University of Arkansas, Dept. of Entomology, A-319, Fayetteville AR 72701. 479-575-3404, Fax 479-575-2452. Email fstephen@uark.edu

FRONTALIS CUP GOLF TOURNAMENT

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FRUSTRANA CUP TOURNAMENT

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