Proceedings

64th Southern Forest Health Work Conference

From Roots to Canopy:

Forest Health Advances with Time and Technology

July 15-17, 2025

Tulsa, Oklahoma

Cover Graphic by Rhys Eshleman, University of Georgia

PROCEEDINGS

64th Annual

SOUTHERN FOREST HEALTH WORK CONFERENCE

Hyatt Regency Tulsa Downtown

Tulsa, Oklahoma

15–17 July 2025

Zach Bragg, Tyler Dreaden, Carrie Fearer, and Dana Nelson, Program Chairs

Dieter Rudolph, Local Arrangements

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Registration List, 64th SFHWC, Tulsa, Oklahoma

* = student, # = remote

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Carissa Aoki
Corbin Armon*
Chris Asaro
Jackson Audley
Chuck Bargeron
Chandler Barton
Meredith Bean
Alexandra Blevins
David Blythe
Faith Boa*
Joshua Bradley
Zachary Bragg
Ethan Breitling
Olivia Burdine*
RaeLynn Butler
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Predeesh Chandran
Natalie Clay
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Gisella DePiazza
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Daniel González-Rodríguez
Steve Grantham
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Lindsey Grimes
Becky Harkness*#
Jessica Hartshorn
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Garron Hicks
Hanusia Higgins*
Mary Hoffman
Leela Hospach*
Ryan Howell
Aryanna James
Vanshika Jindal*
Courtney Johnson*
Todd Johnson
Samantha Kennett*
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Jaden King*
Kier D Klepzig
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Simone Lim-Hing
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Matt Marsh
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Paul McDaniel
Colton Meinecke*
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Elizabeth Middleton
Harrison Miles*
Katy C Moretti
Holly Munro
Ryan Nadel
Annakay Newell
Ourania Nikolaidis*
Rabiu Olatinwo
John Omolewa*
Kelly Oten
James (Forest) Palmer
Flávia Pampolini
William Parrott*
Harvey Payne
Hannah Petronek*
Usman Rabiu*
Sarah Raborn*
Abigail Ratcliff
Lynne K Rieske-Kinney
Dieter Rudolph
Scott M Salom
Alberto Santini#
Noah Schaper
Delaney Serpan*
Chiranjivi Sharma*
William P Shepherd
Laura Sims
Swati Singh*
Bo Song
Lindsey Stone*
Brian T Sullivan
Sarah Terry-Cobo
Gabriel Tigreros
Caterina Villari
Kendra Wagner
Kelly Watson
Dalton Weatherly
Hunter Webb*
Alasdair Woore
Pamela Zader*

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33 students and 73 professional members = 106 registered participants

SFHWC 2025 Group Pictures

Figure 1
Front Row (left to right): Brian Heath, Chiranjivi Sharma, Rabiu Olatinwo, Todd Johnson, Faith Boa
Back Row (left to right): Jon Kressuk, Bud Mayfield, Olivia Andrews, Morgan Knutsen, Megan Anaskevich

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Front Row (left to right): Lindsey Stone, Samantha Kennett, Zach Bragg, Aryanna James, Mary Hoffman
Back Row (left to right): Matt Marsh, Annakay Newell, Ryan Nadel, Daniel González-Rodríguez, Elizabeth Middleton, Scott Salom, Dillon Dunn

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Front Row (left to right): Jaden King, Carrie Fearer, Sarah Raborn, Olivia Burdine, Natalie Clay
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Figure 4
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Back Row (left to right): Temitope Folorunso, Forest Palmer, Katy C. Moretti, Alexandra Blevins, Dieter Rudolph

Figure 6
Front Row (left to right): Will Shepherd, John Omolewa, Delaney Serpan, Ignazio Graziosi, Courtney Johnson, Elizabeth McCarty
Back Row (left to right): Chris Asaro, Demian Gomez, Flávia Pampolini, Evan Long, Noah Schaper, Joshua Bradley, Kelly Oten, Lynne Rieske-Kinney

Figure 7
Front Row (left to right): Corbin Armon, Brian Sullivan, Hunter Webb, Sal Flower, Katlin DeWitt
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Bo Song, Ebere Anozie

Attendees not pictured: Nicolas Anger, Carissa Aoki, Chuck Bargeron, Ethan Breitling, RaeLynn Butler, Predeesh Chandran, Bob Coulson, David Coyle, Steve Grantham, Becky Harkness, Jess Hartshorn, Garron Hicks, Ryan Howell, Simone Lim-Hing, Colton Meinecke, Holly Munro, Harvey Payne, Usman Rabiu, Abby Ratcliff, Alberto Santini, Laura Sims, Swati Singh, Sarah Terry-Cobo, Kendra Wagner, Kelly Watson, Alasdair Woore

64th Annual Southern Forest Health Work Conference Program

July 15-17, 2025 | Tulsa, OK

Tuesday, July 15th **Location**

8:30 AM – 5:00 PM **Meeting Registration** **Foyer**
Organizer: Will Shepherd (USDA Forest Service-SRS)

9:00 – 10:00 AM **A.D. Hopkins Award Committee Meeting** **Studio 304**
Organizer: Albert (Bud) Mayfield (USDA Forest Service-SRS)

10:00 – 11:00 AM **Roger F. Anderson Award Committee Meeting** **Studio 304**
Organizer: Lynne Rieske-Kinney (University of Kentucky)

10:00 – 12:00 PM **Southern Pine Beetle Working Group** **Promenade B**
Organizer: Chris Asaro (USDA Forest Service-FHP)
Moderators: David Coyle (Clemson University) and Chris Asaro

10:00 – 10:30 *Welcome and introduction: Review of SPB prevention program treatments, overview of SPB in 2024, spring trapping survey data for 2025*
David Coyle and Chris Asaro

10:30 – 10:40 *AL current SPB activity, prevention program initiatives, market conditions*
Drew Metzler (Alabama Forestry Commission)

10:40 – 10:50 *MS current SPB activity, prevention program initiatives, market conditions*
Garron Hicks (Mississippi Forestry Commission)

10:50 – 11:00 *GA current SPB activity, prevention program initiatives, market conditions*
Paul McDaniel (Georgia Forestry Commission)

11:00 – 11:30 *SPB Research Round-up: SPB and 'Hotter-Drought'; SPB disappearance from the Western Gulf States; Pheromone Research*
David Coyle, Chris Asaro, and Brian Sullivan (USDA Forest Service-SRS)

11:30 – 12:00 Ips *Research Roundup: Need for more trapping, population data; activity during hot-droughts;* I. avulsus*;* Ips *and prescribed burning*
David Coyle, Chris Asaro, and Hanusia Higgins (University of Georgia)

[**Abstract:**
Elucidating patterns of *Ips* beetle activity in pine stands in southeastern U.S.

Hanusia Higgins, Elizabeth P. McCarty, Cristián R. Montes, Holly Munro, Dan Johnson, Kier D. Klepzig, Christopher Asaro, John Nowak, Kamal J. K. Gandhi

In the past decade, *Ips* bark beetles in the southeastern United States have caused substantial pine mortality and economic damage to the regional forestry industry. While *I. avulsus*, *I. calligraphus*, and *I. grandicollis* typically attack individual stressed trees, widespread recent outbreaks have occurred following periods of drought. However, no empirical data has

confirmed the relationship between drought and *Ips* beetle activity in the southeastern U.S. Recent research about this proposed relationship aims to identify both the patterns on the regional scale and the mechanisms at the individual tree scale. In one of our studies, *Ips* beetles were sampled in pine forests across three states to create models to predict the number of beetles caught based on environmental and stand conditions. Preliminary results indicate that temperature- and water-related variables were most important to predict the number of *I. calligraphus* beetles in baited traps. However, predictive variables varied across all three *Ips* species. A second study, currently in progress, involves excluding rainfall around individual loblolly pine (*P. taeda*) trees to simulate drought, while other trees received ambient precipitation. We measured beetle numbers and tree physiological markers in both drought and control treatments to understand how drought and *Ips* beetles interact as stressors. Elucidating the relationship between climate conditions and *Ips* beetles in the southeastern U.S. may inform proactive forest management practices for an increasingly damaging group of forest pests.]

11:00 AM – 12:00 PM	**Executive Committee Meeting** Organizer: Kamal J.K. Gandhi (University of Georgia)	**Studio 304**
12:00 – 1:00 PM	**LUNCH – on your own**	
12:00 – 8:00 PM	**Poster Set-up** Organizer: Forest Palmer (Clemson University)	**Foyer**
1:00 – 1:15 PM	**Welcome Address** *Welcome to Oklahoma: 100 years of forestry; 50 years of urban forestry* Steve Grantham (Up With Trees Inc.)	**Promenade D**
1:15 – 2:00 PM	**Opening Business Meeting** Kamal J.K. Gandhi (University of Georgia)	**Promenade D**
2:00 – 2:30 PM	**Keynote Address** *The Joseph H. Williams Tallgrass Prairie Preserve* Harvey Payne (The Nature Conservancy)	**Promenade D**
2:30 – 3:00 PM	**Plenary Session 1** *Connecting people to the land: Historic and cultural significance of the Council Oak Tree* RaeLynn A. Butler (Muscogee (Creek) Nation)	**Promenade D**
3:00 – 3:30 PM	**Plenary Session 2** *Forest science in an era of federal resource scarcity* Ethan Breitling (National Alliance of Forest Owners)	**Promenade D**
3:30 – 4:15 PM	**BREAK/GROUP PHOTOS**	**Foyer**

4:15 – 4:30 PM	**2025 State Report** *Updates from a representative of the Southern Group of State Foresters* Dieter Rudolph (Oklahoma Forestry Services)	**Promenade D**
4:30 – 5:15 PM	**A.D. Hopkins Address** *Forty years of ecological musings* Kamal J.K. Gandhi (University of Georgia)	**Promenade D**
6:00 – 8:00 PM	**Mixer and Reception**	**Promenade A**

Wednesday, July 16th — Location

8:00 AM – 12:00 PM **Meeting Registration** — **Foyer**

Organizer: Will Shepherd (USDA Forest Service-SRS)

8:30 – 10:00 AM **Graduate Student Session 1** — **Promenade D**

Organizers: Ashley Schulz (Mississippi State University) and Zachary Bragg (University of Georgia)
Moderator: Samantha Kennett (Clemson University)

8:30 – 8:32 AM **Welcome to first half of the graduate student session**

8:32 – 8:44 AM ***Oviposition success and early survival of the invasive Asian longhorned beetle (*Anoplophora glabripennis*) within controlled and natural field environments in South Carolina***

Lindsey Stone[1], Frederick W. Scheper[2], Caleb M. Davis[1], R. Talbot Trotter[3], and David Coyle[1]
[1]Department of Forestry and Environmental Conservation, Clemson University; [2]Department of Biology, College of Charleston; [3]USDA Forest Service, Northern Research Station

[**Abstract:** The Asian longhorned beetle [*Anoplophora glabripennis* (Motschulsky), ALB] is an invasive wood-boring beetle in North America. ALB larvae feed in the phloem and xylem of several genera of host trees, leading to host decline and death. ALB has been found in six US states and one Canadian province, with the most recent and most southern discovery in South Carolina. Previous eradication efforts have been successful in parts of North America; however, the subtropical climate and novel landscape in South Carolina present new challenges. Current management tactics involves removing infested and high-risk host trees, which are predominantly red maple (*Acer rubrum*) in South Carolina. Infested trees are primarily identified by oviposition sites, which are chewed by gravid females to allow for oviposition under the host tree bark. Infestation intensity is determined using counts of these oviposition sites; although, one egg site does not necessarily equate to one beetle, prompting an analyze of ALB fecundity and early survival within both natural and controlled field environments. Our objectives are to 1) determine ALB fecundity in a controlled field environment, 2) analyze how host tree characteristics (DBH, bark texture, vegetative growth) affect oviposition and early survival in a natural field environment, and 3) compare the egg laying success, egg survival, and early larval survival of ALB between the controlled and natural field environments. For the controlled field environment, we enclosed a mated ALB pair within metal cages on the trunks of 19 live red maple trees (7.6 cm DBH). We monitored each tree daily for new oviposition sites and dissected each site to determine its fate. Concurrently, we collected infested material from felled host trees and dissected each oviposition site, noting the size of the site, the tree diameter at the site, and the surrounding bark texture and vegetative growth. Across both field environments, we dissected 1,093 oviposition sites, finding sites where an egg was never laid. Overall, the oviposition success, egg survival, and early larval survival were significantly lower in the controlled environment compared to the natural. These results enhance our

understanding of ALB biology and support more effective modeling and management strategies.]

8:44 – 8:56 AM ***Effects of emerald ash borer specific gene silencing on soil communities***

Faith S. Boa and Lynne K. Rieske
Department of Entomology, University of Kentucky

[**Abstract:** Emerald ash borer is a highly invasive wood-boring beetle originating from Asia. It has become widespread throughout the United States and has led to extensive ash mortality. Conventional management for EAB includes infested tree removal, quarantines, chemical control, and biological control. Despite these efforts, EAB continues to spread making exploration of alternative methods essential. One novel, emerging approach to management is RNA interference (RNAi), a highly specific gene silencing mechanism that is a naturally occurring cellular immune response. The RNAi pathway is activated following the introduction of an exogenous double-stranded RNA (dsRNA) and may induce insect mortality when essential genes are silenced; its efficacy has been demonstrated in both laboratory and greenhouse studies. Along with causing EAB mortality, previous non-target studies show it is specific and causes no effect on survival for insects spanning five functional guilds. Here, I evaluate potential non-target effects following application of EAB specific dsRNA. To do this I performed two studies: one in the field examining the abundance and diversity of soil arthropods in pre-treatment and post-treatment samples and another in-lab evaluating survival and reproduction of a model soil arthropod, *Folsomia candida* (Collembola: Isotomidae), after exposure to EAB dsRNA. My null hypothesis is that there will be no effects on non-target soil organisms due to the high specificity of RNAi. Soil-arthropod and microbial samples were taken throughout the growing season. Arthropod samples were sorted into morphospecies, and diversity and abundance quantified via indices. Preliminary results demonstrate no significant effect of the EAB specific dsRNA on soil arthropod diversity. Collembolans were evaluated in a petri dish assay at 14 days for survival after exposure and at 28 days to quantify reproduction, and the number of surviving individuals and number of juveniles was recorded. Preliminary results demonstrate no effect on survival and the reproduction data is still being analyzed. My project is generating data that offers greater insight into the specificity of the EAB-specific dsRNA for soil communities. Further demonstrating specificity is essential before RNAi targeting EAB can be deployed as a commercially available method of ash tree protection from EAB.]

8:56 – 9:08 AM ***Coppiced ash trees as a sustained habitat for emerald ash borer populations to support parasitoid establishment***

Pamela Zader, Courtney Johnson, Robert Jetton, and Kelly Oten
Department of Forestry and Environmental Resources, North Carolina State University

[**Abstract:** The emerald ash borer (EAB; *Agrilus planipennis* Fairmaire) is an invasive wood-boring pest responsible for significant mortality of North American ash trees (*Fraxinus* spp.). In its native range of Northeast Asia, EAB populations are regulated by several parasitoid Hymenopterans, including *Oobius agrili* Zhang and Huang, *Spathius agrili* Yang, *S. galinae* Belokobylskij, and *Tetrastichus planipennisi* Yang. However, in

North America, it has few natural predators, prompting the importation and release of these parasitoids in the U.S. as biocontrol agents. A major challenge in parasitoid establishment is the rapid mortality of ash trees, which can lead to dramatic declines in EAB populations, and, consequently, the collapse of associated parasitoid populations. This research evaluates the effectiveness of coppicing – cutting trees to stimulate regrowth – as a strategy to maintain EAB populations, thereby supporting sustained parasitoid establishment. We hypothesize that EAB will migrate from dead ash trees to new shoots on coppiced ash trees, sustaining both its population and parasitoid populations. In 2023, *O. agrili* was released in a stand of coppiced green ash trees in Goldsboro, NC. *O. agrili*, *S. agrili*, and *S. galinae* were released in the same stand in 2024. Canopy health assessments were conducted for every tree in the coppiced stand and compared to a non-coppiced stand. Emerald ash borer adult populations were monitored in both stands in 2024 and 2025 using Lindgren funnel traps. *O. agrili* establishment was evaluated using a combination of bark sifting, sentinel EAB eggs, and burlap traps. Findings from this research may contribute to sustainable management strategies aimed at promoting parasitoid establishment in regions impacted by EAB.]

9:08 – 9:20 AM ***Impact of trap type, Fluon treatment, and lure composition on the collection of longhorned beetles (Coleoptera: Cerambycidae) in subtropical southeastern Louisiana***

Chiranjivi Sharma[1], Winter Sheline[1], Elise Grossman[2], Jorge Macias[3], Bob Setter[3], and Todd D. Johnson[1]
[1]Department of Entomology, Louisiana State University; [2]USDA ARS, Beneficial Insects Introduction Research Unit, Newark, DE; [3]Synergy Semiochemicals Corp.

[**Abstract:** The expansion of global trade in wood and wood packaging materials has increased the risk of unintentional introductions of non-native woodboring insects, which can cause considerable ecological and economic damage. Monitoring both native and exotic species in managed and unmanaged forests relies heavily on semiochemical-baited traps. Improving these survey efforts requires optimizing factors such as trap type, fluon application, and lure composition. However, concerns about fluon's durability under field conditions in hot and humid environments, and potential future shortages remain unresolved.

With an aim to improve the survey efforts, we conducted a field bioassay to test the impact of these factors on the collection of longhorned beetles from July to November 2024 in loblolly pine predominated forest and bottomland hardwood forest in subtropical Louisiana. Eighteen traps per site—including Synergy Multitrap System - 6 funnel traps with and without fluon, and Synergy Funnel Trap II - 12 funnel traps—were deployed in 5-meter-spaced linear transects. All traps were baited with a six-component cerambycid lure and a low-release ethanol bag, with one trap per type serving as an ethanol-only control.

In total, 5,303 beetles representing 44 cerambycid species were captured. The number of species was the highest in the subfamilies Lamiinae (63.64%) and Cerambycinae (29.55%), with the Lamiine *Styloleptus biustus* alone accounting for 65.53% of total captures. Synergy Multitrap System and funnel trap II were equally effective in capturing cerambycid. Application of fluon to Multitrap system significantly increases the trap capture by ~5.5X times than Multitrap system without fluon application. Baiting traps with ethanol combined with cerambycid lure significantly increases the trap capture by ~4X times higher than the traps baited with ethanol only. Our results, therefore, underscore the importance of factors such as trap design and

implementation in optimizing survey effectiveness for early detection and rapid response monitoring programs of woodboring insects which may be either invasive or of conservation concerns.]

9:20 – 9:32 AM ***Oviposition studies of* Leucotaraxis *spp., predators of hemlock woolly adelgid***

Olivia Andrews[1], Scotty Yang[1], Albert Mayfield[2], Mark Whitmore[3], Thomas Kuhar[1], and Scott Salom[1]
[1]Department of Entomology, Virginia Tech; [2]USDA Forest Service, Southern Research Station; [3]Department of Natural Resources and the Environment, Cornell University

[**Abstract:** For two decades the focus for biological control of the invasive hemlock woolly adelgid, *Adelges tsugae* Annand (Hemiptera: Adelgidae) has been two predators in the genus *Laricobius* (Coleoptera: Derodontidae). *Laricobius* spp. only impact the first generation of HWA which suggests a need for additional predators. The second most abundant predators of HWA on western hemlock, *Tsuga heterophylla* (Raf.) Sarg., in the Pacific Northwest, are two species of *Leucotaraxis* flies (Diptera: Chamaemyiidae). To better understand their potential for biological control of HWA on eastern hemlock, *Tsuga canadensis* (L.) Carrière, we conducted laboratory studies to assess their numerical responses to different HWA densities. *Leucotaraxis argenticollis* was only assessed on the first generation of HWA while *Le. piniperda* was assessed on both generations of HWA, as the phenology in the eastern United States is unknown for this species. Prey densities of 0, 3, 6, 12, 24, and 48 HWA ovisacs were used to assess the egg laying ability of both species of silver flies. *Le. argenticollis* significantly increased their oviposition in response to an increase in HWA densities on the sistens ovisacs containing progrediens eggs. *Le. piniperda* oviposition was not significantly influenced by HWA densities for either generation of HWA. Overall, *Le. argenticollis* laid more eggs than *Le. piniperda* and laid their eggs more frequently on or under the ovisac than *Le. piniperda*. Behavior studies assessing the response of both species to HWA-infested branchlets were also performed and recorded via GoPros to document their oviposition behaviors. Detailed analysis of these observations will be presented.]

9:32 – 9:44 AM ***Soil ecology following suppression of* Ailanthus altissima *with augmentative biological control***

Harrison Miles[1], Scott Salom[2], Jacob Barney[3], Brian Strahm[1], and Carrie Fearer[1]
[1]Department of Forest Resources and Environmental Conservation, Virginia Tech; [2]Department of Entomology, Virginia Tech; [3]School of Plant and Environmental Science, Virginia Tech

[**Abstract:** *Ailanthus altissima* is an invasive deciduous tree first brought to the United States in 1784. Native to the temperate forests of East Asia, *Ailanthus* is now one of the worst invasive plants in North America. Conventional control methods of *Ailanthus* are ineffective at large scales due to its rapid growth, high rate of sexual reproduction, and ability to vegetatively reproduce from stumps and lateral roots. Compounding these issues is the tree's production of an allelopathic quassinoid, ailanthone, a root exudate known to inhibit growth and germination of native plant species. In the early 2000s, a native fungal plant pathogen, *Verticillium nonalfalfae* (strain VnAa140), was identified as

highly selective for *Ailanthus* and is currently being tested as an augmentative biological control agent. This study aimed to better understand the effect of Verticillium wilt on soil in inoculated *Ailanthus* stands. In the summer of 2024, two *Ailanthus* stands near Williamsburg, VA were inoculated with *V. nonalfalfae*; a third control plot was mock-inoculated. Soil samples were collected in May, July, and September 2024 from multiple points within each plot. Results from germination bioassays using this field-collected soil show no relationship between tree death from Verticillium wilt and germination rates or early growth of select herbaceous species. However, a comparison of soil collected within the control-inoculated plot and soil collected from a plot with no *Ailanthus* present suggests the presence of *Ailanthus* has differential effects on early root and shoot growth of some of the tested herbaceous species but not on their germination rate. Direct quantification of ailanthone is needed to further validate these results.]

9:44 – 10:00 AM **Closing**

10:00 – 10:30 AM **BREAK** **Foyer**

10:30 AM – 12:00 PM **Graduate Student Session 2** **Promenade D**

Organizers: Ashley Schulz (Mississippi State University) and Zachary Bragg (University of Georgia)
Moderator: Hannah Petronek (University of Georgia)

10:30 – 10:32 AM **Welcome to second half of the graduate student session**

10:32 – 10:44 AM ***Genetic relatedness and environmental factors in a surviving green ash population amid late-stage emerald ash borer infestation***

Jonathan Kressuk[1], Zane Smith[2], Ryan Kuster[2], Margaret Staton[2], Zakiya Leggett[1], Robert Jetton[1], and Kelly Oten[1]
[1]Department of Forestry and Environmental Resources, North Carolina State University; [2]Department of Entomology and Plant Pathology, University of Tennessee

[**Abstract:** During the twenty years since the initial discovery of emerald ash borer (EAB; *Agrilus planipennis* Fairmaire) in the United States, the insect continues to devastate native ash (*Fraxnius* spp.) populations. Despite this widespread mortality, isolated healthy, mature ash trees—referred to as "lingering ash"—persist in heavily infested areas. These individuals demonstrate sustained canopy health and apparent resilience to EAB, positioning them as critical to the restoration and conservation of North American ash. The potential genetic mechanisms underlying this resistance, alongside the influence of environmental factors and competition, remain largely unexplored. This study sought to assess the genetic relatedness of surviving green ash (*F. pennsylvanica* Marsh.) and monitor the health dynamics of candidate lingering green ash over a six-year period in the North Carolina Piedmont. Leaf samples were collected from 192 trees, including 96 candidate lingering ash, for whole-genome resequencing. For health monitoring, trees were rated on a scale of 1 to 5, with 1 indicating a full canopy with

minimal epicormic sprouting and 5 representing total mortality. Initial surveys in late summer 2020 identified lingering ash based on canopy health and minimal EAB signs and symptoms. Annual reassessments for the next 5 years documented both declining and healthy, recovering individuals. Fluctuations in surveyed ash population health were observed, likely correlating with local beetle pressure. Additionally, we evaluated the impact of competition and environmental factors through a competition index, IML Resistograph and tree core growth measurements, and comparison of soil nutrition between candidate lingering and dying trees. Competition was similar across all health classes and expectedly declined after the arrival of EAB in 2015. Analysis of growth measurements found an initial increase in growth around 2019, likely in response to dying ash neighbors. However, this release was temporary, and growth slowed in subsequent years. Quantities of select soil nutrients were also greater surrounding healthy ash trees than dead stems, likely due to the presence of leaf-litter-driven nutrient cycling. This included potassium, magnesium, and calcium. These insights highlight the diverse suite of factors influencing long-term ash health.]

10:44 – 10:56 AM ***Exploring the role of resin in loblolly pine's defense against brown spot needle blight***

Jaden King[1], Jonathan Cale[2], Timothy Shearman[1], Joseph Fan[1], and Lori G. Eckhardt[1]
[1]College of Forestry, Wildlife and Environment, Auburn University;
[2]University of Northern British Columbia

[**Abstract:** Loblolly pine (*Pinus taeda* L.) is vital for the economic stability of the southeastern U.S. and is the most common tree species in Alabama. However, it faces threats from the pathogen *Lecanosticta acicola*, which causes brown spot needle blight (BSNB). This study aimed to assess resin secretion, an important defense mechanism, in relation to varying disease levels in loblolly pine. We hypothesized trees with more disease would secrete more resin than trees with less disease to help overcome and prevent the disease from invading. Thirteen plots in Alabama were established and resin was collected by tapping the trees and measuring the amount of resin secreted in 24 hours. Additionally, trees were rated for disease severity on a scale from 1 (low infection) to 3 (high infection). Analysis was conducted in R using a general linear mixed model, with plot treated as a random factor to account for variations in stand composition and environmental conditions. Trees with a medium disease rating secreted 25% more resin than those with a low rating, while highly diseased trees secreted 20% more resin than those with a low rating. While our findings were not statistically significant, our findings may be biologically relevant since trees with more disease tend to produce more resin. This observation offers insight into how trees respond to diseases caused by BSNB by increasing resin production. The elevated resin levels in more diseased trees may act as a defense mechanism, helping to protect them from secondary pathogens, such as the southern pine beetle, which targets already stressed trees. In addition, understanding the biology behind how the tree responds to disease will allow for improved management practices for landowners dealing with BSNB.]

10:56 – 11:08 AM **Ips *bark beetles in pine forests vary across abiotic gradients in the southeastern U.S.***

Hanusia Higgins[1], Elizabeth P. McCarty1, Cristián R. Montes[2], Holly Munro[3], Kier D. Klepzig[4], Christopher Asaro[5], John Nowak[5], and Kamal J. K. Gandhi[1]

[1]Warnell School of Forestry and Natural Resources, University of Georgia; [2]Rayonier Inc.; [3]National Council for Air and Stream Improvement, Inc.; [4]The Jones Center at Ichauway; [5]USDA Forest Service Southern Research Station

[**Abstract:** Variable precipitation regimes and higher temperatures attributed to climate change are hypothesized to make pine trees more susceptible to *Ips* bark beetles in the southeastern United States. Three species, *Ips avulsus, I. calligraphus,* and *I. grandicollis*, preferentially attack diseased, damaged, or otherwise stressed trees, but the exact nature of their relationship with tree health is unknown. In addition, changing climate regimes impact bark beetles directly, e.g., by accelerating development with higher temperatures. *Ips* beetle activity is not comprehensively monitored, but recent severe beetle outbreaks pose an elevated threat to the region's forests, such as those causing widespread tree mortality along the Gulf coastal plain in late-2023. Our goal was to model the relationships between *Ips* beetle trap catches—as a proxy for population levels—and various climatic and stand structure variables. During 2022-2023, *Ips* beetles were collected in pheromone-baited traps in pine stands spaced across a landscape that spanned multiple environmental factors, including temperature and water deficit. We used machine learning models to identify the environmental and stand conditions most predictive of beetle population sizes. Preliminary results indicate that the most important predictor variables, including prior-year trap catches, soil water capacity, and water deficit, varied between the three *Ips* species, as did model performance. Our findings will inform pest management decisions in pine stands and may illuminate native forest pests' increased potential for damage under a changing climate.]

11:08 – 11:20 AM ***Alternative eradication and ovipositional behavior of Asian longhorned beetle in South Carolina***

Courtney L. Johnson[1], David R. Coyle[2], Abby R. Ratcliff[1], and Kelly L.F. Oten[1]

[1]Department of Forestry and Environmental Resources, North Carolina State University; [2]Department of Forestry and Environmental Conservation, Clemson University

[**Abstract:** The Asian longhorned beetle (ALB), *Anoplophora glabripennis*, is an invasive wood-boring beetle that causes death of hardwood trees through structural weakening and stem breakage. Maple (*Acer* spp.) is strongly preferred, and conventional eradication strategies rely on removing and chipping host trees. In 2020, ALB was discovered in Charleston County, South Carolina, a novel environment characterized by swampy terrain that restricts the use of heavy machinery, prompting the exploration of alternative management strategies. One such strategy, called "Drop-and-Leave" (D&L), involves felling and leaving host trees onsite and is currently being explored as an alternative management tactic within SC.

In 2023, a study was initiated to evaluate the efficacy of D&L within the SC ALB quarantine zone. A total of 180 red maple (*Acer rubrum*) trees were felled across three research sites (60 per site) with equal numbers cut in June and August. After felling, all visible damage (exit holes, oviposition pits, and larval galleries) was counted and marked. Follow-up inspections in winter 2023 and summer 2024 revealed seven potentially fresh oviposition pits and three potentially fresh exit holes on just four of the 180 trees (2.22%). McNemar's Chi-Square Test with continuity correction revealed a significant difference in the proportion of trees with marked damage that occurred before and after felling ($p < 2.2e-16$), supporting the hypothesis that D&L reduces ALB activity.

To further understand ovipositional behavior and mechanism of this management method, tent assays were conducted in 2023. Eighteen red maple logs were oriented in three positions – vertically, horizontally on the ground, and horizontally in the air – to assess visual cues influencing ALB oviposition. Three mating pairs of ALB were released into each of three tents, and oviposition pits were recorded weekly for six weeks. A generalized linear mixed model found significantly more oviposition pits on vertically oriented logs ($p=0.01$), supporting the hypothesis that ALB is less likely to recognize downed material as suitable for egg-laying. These findings highlight the potential to use D&L as an effective management tactic and offer insight into ALB host recognition to inform eradication efforts.]

11:20 – 11:32 AM ***Seasonal population patterns of the invasive crape myrtle bark scale (*Acanthococcus lagerstroemiae*) in South Carolina***

Samantha M. Kennett[1], Emily E. Mueller[2], Nilesh Timilsina[1], and David R. Coyle[1]

[1]Department of Forestry and Environmental Conservation, Clemson University; [2]Capitol Grounds and Arboretum, Architects of the Capitol, Washington, D.C.

[**Abstract:** Crape myrtle bark scale (*Acanthococcus lagerstroemiae*; CMBS) is an invasive pest that poses a threat to crape myrtles (*Lagerstroemia* spp.), a popular ornamental species widely used in landscapes across the southern and eastern United States. Since its initial detection in Texas in 2004, CMBS has spread to at least 15 other states across the Southeast. Recent research has investigated CMBS population patterns in parts of the southern US, but we do not have a full picture of these patterns across the entirety of their range. CMBS can negatively impact crape myrtles by facilitating the growth of black sooty mold, which can lead to aesthetic decline and, in extreme cases, plant mortality. In their native range, CMBS can have 2-4 overlapping generations per year, but the life cycle in their introduced range is not fully understood. Here we investigate seasonal patterns and activity peaks of CMBS populations in Clemson and Greenville, South Carolina. To monitor CMBS populations, we placed double sided tape on crape myrtles that were changed approximately every 14 days to identify CMBS activity across different seasons. Our data identifies three activity peaks for crawlers in South Carolina in May, July, and October, suggesting that there are three annual generations. Identifying peak periods for early instar emergence allow us to develop more effective, seasonally timed pest management methods.]

11:32 – 11:44 AM ***Understanding and managing a new invasive pest: An update on elm zigzag sawfly in the U.S.***

Delaney Serpan, Abby Ratcliff, Steve Frank, and Kelly Oten
Department of Forestry and Environmental Resources, North Carolina State University

[**Abstract:** Elm zigzag sawfly [EZS; *Aproceros leucopoda* (Hymenoptera: Argidae)] is one of North America's newest invasive pests whose range has been rapidly expanding across the eastern United States. Native to eastern Asia and invasive throughout Europe, EZS was first detected in North America in 2020 in Québec, Canada. In 2021, the pest was confirmed in the United States for the first time in Virginia. Since then, EZS has been documented in 12 additional states, including North Carolina. As larvae, EZS defoliate elm trees. Defoliation severity can range from almost undetectable to complete defoliation, but as a new invader little is known about its behavior, management, and impacts in North America. Our objectives are to document natural enemies of EZS in North Carolina, document EZS phenology, and create a multi-state phenology model that can inform management. Additionally, we conducted a pilot pesticide trial using chemicals that are accessible to landowners in the United States so that we can provide effective management recommendations to stakeholders.

During the 2023 and 2024 growing seasons, we documented EZS life stages present, growing degree days (GDD base 10°C), and temperature. Using emergence traps, we determined a range of emergence based on GDD. In 2023 and 2024, initial adult emergence was observed between 312 and 430 GDD. In 2023, the last field observation of EZS was recorded at 2788 GDD. In 2024, the last field observation of EZS was recorded at 3187 GDD. To evaluate effective active ingredients, we applied imidacloprid and dinotefuran via soil injection at label rate in spring 2023 and 2024. In 2023, EZS populations decreased by 59.96% each week on dinotefuran treated trees and by 79.44% on imidacloprid treated trees. In 2024, we sampled for natural enemies of EZS in infested elm trees. Our data will be used to inform further research.]

11:44 – 11:56 AM ***Screening loblolly pine (*Pinus taeda*) genotypes for resistance against brown spot needle blight using artificial inoculations***

Rhys Eshleman[1], Katie McKeever[2], Zachary Bragg[3], M. Nasir Shalizi[4], Trevor Walker[4], and Caterina Villari[3]
[1]Department of Plant Biology, University of Georgia; [2]USDAForest Service, Forest Health Protection, Asheville, NC; [3]Warnell School of Forestry and Natural Resources, University of Georgia; [4]Cooperative Tree Improvement Program, North Carolina State University

[**Abstract:** Brown spot needle blight (BSNB; caused by the fungal pathogen *Lecanosticta acicola*) is a needle disease that affects more than 50 pine species globally, causing premature needle casting and growth reduction. In the southern United States, it is most well-known for its impact on its coevolved host longleaf pine but has seldom been reported as a serious issue on other major commercial species in the region, including loblolly pine. However, within the past decade, a notable increase in BSNB reports on loblolly pine, particularly within commercial planted forests, has prompted concern among landowners and foresters in the region. Due to this relatively recent escalation of BSNB incidence and severity on loblolly pine, there are still only a few viable management options available to growers. Tree breeding has potential to

boost loblolly resistance to BSNB but requires both heritable resistance and rigorous screening protocols to identify resistant genotypes. In this project, we developed and optimized a greenhouse screening protocol for loblolly pine against BSNB, which we used to screen commercial families from across the southern U.S. Because greenhouse screenings are conducted with artificial inoculations on seedlings, they can generate results rapidly and reduce the confounding effects of numerous environmental variables, such as irregular disease pressure. To develop a high-throughput greenhouse screening protocol, we tested for the optimal parameters to maximize BSNB symptom incidence on loblolly pine seedlings, as well as *L. acicola* inoculum production *in vitro*. We then developed a rapid, easily transferable disease severity scoring system using a quantitative ordinal scale. Next, we applied this protocol to screen 94 commercial families from three southern provenances (Gulf, Atlantic, and Piedmont) using a randomized block design. We found significant genetic variation among families, with a family-mean heritability of 0.35. The screening was conducted in two runs, and there was a significant interaction between family and run, although the most resistant and susceptible families ranked similarly across runs. Future directions include comparing these results with field trials and characterizing host resistance on a chemical and anatomical level.]

11:56 AM – 12:00 PM **Closing**

12:00 – 1:00 PM **LUNCH – on your own**

1:30 – 3:00 PM **Field Trip**
Walking tour & collaboration conversations
Turkey Mountain Urban Wilderness Area: Near - 6800 S Elwood Ave, Tulsa, OK (Please do not park at the church across the street)
Organizer: Dieter Rudolph (Oklahoma Forestry Services)

4:00 – 6:00 PM **Frustrana Cup**
Cornhole teams competition
NEFF Brewing: 321 S Frankfort Ave Suite #2, Tulsa, OK
Organizers: Brittany Barnes (University of Georgia) and Abby Ratcliff (North Carolina State University)

6:00 – 8:00 PM **Poster Session** **Foyer**
Organizer: Forest Palmer (Clemson University)
→ *See page 19 for poster details*

8:00 – 10:00 PM **Blacklight Insect Sampling** **Woodward Park**
Organizer: Gabriel Tigreros (Jones Center at Ichauway)
Interested in attending? Please contact Gabe at 941-718-3607
Meet in hotel lobby for transportation arrangements; sampling will take place between the *Welcome Cetner* and *Conservatory*
Woodward Park and Gardens: 2435 S Peoria Ave, Tulsa, OK

Field Trip Details

Located just 7.5 miles (about a 15-minute drive) from the conference hotel, Turkey Mountain Urban Wilderness Area offers a unique look at the challenges and successes of cross-agency collaboration. This guided field tour will explore how the Oklahoma Forest Service and River Parks Authority are working together to manage this popular public recreation area.

Space is limited — vans will be available for transportation

Frustrana Cup Details

Join us just a short 10-minute walk (0.5 mi) from the conference hotel at NEFF Brewing for this year's Frustrana Cup, a fun and spirited SFHWC tradition! Each year, the Cup features a new game, this time it's cornhole, and pairs students with professional members to encourage networking, collaboration, and laughs along the way.

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

Forest health outreach: Strength through collaboration **Promenade A**
Organizer and Moderator: Elizabeth McCarty (University of Georgia)

- ***Increasing southern pine beetle awareness during an outbreak year in Georgia.*** Elizabeth McCarty (University of Georgia) and Paul McDaniel (Georgia Forestry Commission)

  [**Abstract:** Southern pine beetle (Dendroctonus frontalis) (SPB) had over 2400 Georgia Forestry Commission (GFC) documented infestations in Georgia in 2024. Paul McDaniel (GFC Forest Health Program Manager) and Elizabeth McCarty (University of Georgia Forest Health Specialist) partnered in an outreach effort to serve Georgia landowners during this outbreak year. Outreach was multifaceted and included collaborative presentations, an outreach publication, newsletter articles, social media posts, and a Ranger Nick episode on the Farm Monitor. Additionally, an Abraham Baldwin Agriculture College undergraduate student participating in a UGA internship program is producing 50 bark beetle identification boxes to assist GFC foresters with their SPB trapping identifications. Outreach presentations were given at Georgia Forestry Association, Southern Wood Producers Association, UGA Extension agent trainings, and county Extension programs. Over 350 forestry professionals and landowners attended these meetings. The SPB outreach publication was advertised using social media posts from multiple venues, resulting in over 2,100 online publication views in six months. Social media posts with our shared messaging were coordinated with UGA Warnell School, GFC, the Center for Invasive Species and Ecosystem Health, Georgia Arborists Association, and others. Facebook posts resulted in the most SPB outreach publication views. Our efforts highlight the power of a natural collaboration between a state forestry agency and university outreach specialist. Key is having positive conversations around how we can support each other in our respective programs.]

- ***Generation X-tension: Integrating students in extension programming.*** Kelly Oten (North Carolina State University)
- ***Citizen science as a tool to sample underrepresented forest ecosystems.*** Kristy McAndrew (Mississippi State University)
- ***Wild spotter invasive species ambassador training – Thinking differently about collaborations.*** Chuck Bargeron (University of Georgia)
- **Group discussion:** *Challenges and success with collaborative forest health outreach*. Elizabeth McCarty (University of Georgia)

Heat island effect and the health of urban forests **Promenade B**
Organizer: Ignazio Graziosi (University of Georgia)
Moderators: Lynne Rieske-Kinney (University of Kentucky) and Kelly Watson (Eastern Kentucky University)

- **Session introduction.** Ignazio Graziosi (University of Georgia)
- ***Understanding urban heat through community engagement*.** Sarah Terri-Cobo (City of Oklahoma City)
- ***Addressing urban heat: The development of Tulsa's urban forest masterplan*.** Steve Grantham (Up With Trees Inc.)
- ***Monitoring climate-driven urban forest health through campus-based learning: A case study from Eastern Kentucky University*.** Kelly Watson (Eastern Kentucky University)
- ***Rising temperatures are stressing urban trees and encouraging the spread of invasive alien pathogens*.** Alberto Santini* (National Research Council of Italy) **virtual presentation*
- **Conclusion.** Ignazio Graziosi (University of Georgia), Lynne Rieske-Kinney (University of Kentucky), and Kelly Watson (Eastern Kentucky University)

Needle diseases of southern pines: A test case for the Pine Pandemic Preparedness Plan **Promenade C**
Organizers: Rabiu Olatinwo (USDA Forest Service-SRS), Tyler Dreaden (USDA Forest Service-SRS), and Kier Klepzig (Jones Center at Ichauway)
Moderators: Kier Klepzig and Rabiu Olatinwo

- ***Addressing a needle disease epidemic in southern pines through the Pine Pandemic Preparedness Plan*.** Kier Klepzig (Jones Center at Ichauway), Kamal J.K. Gandhi (University of Georgia), Caterina Villari (University of Georgia), and the Needle Disease Working Group
- ***On multiple fronts: Advances in the efforts to reduce the impact of brown spot needle blight on loblolly pine*.** Colton D. Meinecke (University of Georgia), Rhys A. Eshleman (University of Georgia), Julia Luyk (University of Georgia), Zachary Bragg (University of Georgia), and Caterina Villari (University of Georgia)

[**Abstract:** Needlecasts and needle blights are fungal diseases that cause the death or premature shedding of conifer needles. Historically, needle diseases were an infrequent and secondary issue on loblolly pine (*Pinus taeda*) but have increased in occurrence and severity in the last decade. Moreover, *Lecanosticta acicola*, the causal agent of brown spot needle blight (BSNB), is consistently associated with large and damaging outbreaks throughout the Southeastern United States. This increased impact of BSNB to loblolly pine is a primary concern for both industry and government land managers. Owing to the recency of this emerging threat, considerable knowledge gaps remain regarding the nature of disease development, the basis of host disease resistance, and the long term impact on stand health and productivity. Within a regionwide collaborative framework, our team at the University of Georgia is engaged in multiple

research efforts to: (i) characterize pathogenicity of fungi associated with disease and improve detection of these organisms, (ii) estimate the loss of growth and yield incurred by needle death and defoliation, (iii) identify, characterize, and select for natural genetic resistance to BSNB, and (iv) develop strategies to intervene in outbreaks and mitigate damage to affected stands. In collaboration with academic, public, and private partners, our research spans a diversity of disciplines, leveraging cutting edge technologies to improve our ability to respond to, reduce, and ultimately preempt the impacts of BSNB to southern forests.]

- ***Genomic comparison of* Lecanosticta acicola *isolates provides clues to the cause of the loblolly pine outbreak.*** Tyler Dreaden (USDA Forest Service-SRS), Cady Greenslit (USDA Forest Service-SRS), Rebekah Ellsworth (University of Kentucky), Caterina Villari (University of Georgia), and Mark Farman (University of Kentucky)

- ***Exploring multidisciplinary approaches to mitigate the impact of brown spot needle blight in southeastern forests*.** Jaden King (Auburn University), Temitope Folorunso (Auburn University), Gabriel Silva (Auburn University), Swati Sing (Auburn University), Lana Narine (Auburn University), Janna Willoughby (Auburn University), and Lori G. Eckhardt (Auburn University)

- ***Current progress on combating needle pathogens and forestry professional worker shortages focused in the West Gulf through a network effort of research, teaching, and service*.** Laura Sims (University of Arkansas at Monticello), Dalton Weatherly (University of Arkansas at Monticello), Corbin Armon (University of Arkansas at Monticello), Rabiu Olatinwo (USDA Forest Service-SRS), Jaesoon Hwang (USDA Forest Service-FHP), Wood Johnson (USDA Forest Service-FHP), Shaoyang Yang (Louisiana Tech), and Michael Blazier (University of Arkansas at Monticello)

  [**Abstract:** Pine needle blights and casts have emerged in the south as an economic threat to loblolly pine. In addition, these diseases threaten the landscape and ecological services provided by southern forests. The purpose of the project is to help assess and protect southern pine forests through research, education, cooperation, and service by working through set objectives. The objectives are as follows 1.) create a future forward space for forest health related activities that encourages collaboration, support and networking in a setting that displays the benefits, importance, and prominence of southern forestry and heritage, science and progress; 2.) provide forestry students with access and opportunity to science to improve job opportunities; 3.) provide support for testing of needle disease issue in the west Gulf; 4.) establish long-term monitoring plots; 5.) evaluate the ecological and economic damage caused by needle pathogens in the region and begin to develop an approach to resolution. Progress on objectives are as follows 1.) The Arkansas Forest Health Research Center (FHRC), proposed in 2024 began construction in January 2025 and expected completion is spring 2026 2.) it contains four laboratory-based classrooms for biology, chemistry, and forest health. 3) Needle disease testing has been conducted on 185 samples including many for industry partners, across 16 counties in Arkansas and 11 Parishes in Louisiana; with almost all disease attributable to brown spot needle blight and other needle casts present, with a map and information published through the University of Arkansas, extension and research. 4) Long-term monitoring is underway for needle diseases in Drew County, Arkansas 5.) which will help to understand the potential benefits of using prescribed fire and other management scenarios (fertilizer/mulch) to improve stand resilience. Thus far, results from management efforts show encouraging results to reduce disease pressure on impacted trees, two research technicians and five interns (two at

Louisiana Tech University and three at University of Arkansas, Monticello have been trained and worked on the project. Overall, forest health challenges can be used as opportunities for increased jobs and training, exposure to science, improving understanding of problem development and resolution.]

- ***Etiology and disease biology of brown spot needle blight on loblolly pine: Focus on Mississippi outbreaks.*** Nicolas Anger (University of Florida), Katherine E. Smith (USDA Forest Service-SRS), Jason A. Smith (University of Mount Union), John W. Thomason (Mississippi State University), Kristy M. McAndrew (Mississippi State University), and John J. Riggins (Oregon State University)

10:00 – 10:30 AM BREAK Foyer

10:30 AM – 12:00 PM Concurrent Session 2

State Cooperators Session **Promenade A**
Organizers: Katy Moretti and David Coyle (Clemson University)
Moderator: Katy Moretti

- ***Shifting Perspectives: Developing More Meaningful Outreach.*** Dieter Rudolph (Oklahoma Forestry Services) and Tony Pascal (Oklahoma Forestry Services)
- ***Tennessee's cooperative state response to natural disasters and new pests: Cogongrass, elm zigzag sawfly, and Hurricane Helene.*** Katy Kilbourne (Tennessee Division of Forestry)
- ***Pine health in southeastern Arkansas: Lessons in landowner support and diagnosing forest disturbances.*** Chandler Barton (Arkansas Department of Agriculture-Forestry Division)

  [**Abstract:** A decline in health of loblolly pine was observed in southeastern Arkansas within the Mississippi Alluvial Plain between 2022 and 2025. This decline was caused by several identifiable factors, though the recurring brown discoloration on pine trees was largely caused by a complex of pine needle diseases. Infections of brown spot needle blight, *Lecanosticta acicola*, appeared to be a considerable factor that caused mortality. Additionally, the presence of non-target herbicide injury was investigated. In a sampling effort, the Arkansas Department of Agriculture confirmed that the active ingredient paraquat was present on stands of loblolly pine, though the effects of this contact remained uncertain.]

- ***Weird-looking leaves: A Kentucky case study of "potential" herbicide damage to the forest interior.*** Alexandra Blevins (Kentucky Division of Forestry)

Let the good bugs crawl: Beneficial forest insects **Promenade B**

Organizers: Gabriel Tigreros and Thomas N. Sheehan (Jones Center at Ichauway; University of Georgia)
Moderator: Gabriel Tigreros

- ***Diversity in decay: Saproxylic beetles and true bugs in longleaf pine.*** Gabriel Tigreros (Jones Center at Ichauway; University of Georgia), Kier D. Klepzig (Jones Center at Ichauway), and Joseph V. McHugh (University of Georgia)
- ***Ants associated with deadwood and bluestain fungi in a temperate pine forest.*** Natalie Clay (University of Arkansas), Casey Morin (Louisiana Tech), Juliet Tang (USDA Forest Service-FPL), Nathan Little (USDA Agricultural Research Service), Courtney Siegert (Mississippi State University), and John Riggins (Mississippi State University)
- ***Landscape transformation and insect biodiversity: Exploring anthrome and biome influences.*** Bob Coulson (Texas A&M University), Otis Akrasi (Texas A&M University), E. V. Voltura (Texas A&M University), and Anthony Filippi (Texas A&M University)
- ***The impact of land use on pollinator communities in upland oak forests.*** John Omolewa (Mississippi State University), Christine Fortuin (Mississippi State University), Austin Himes (Washington State University), Priyadarshini Basu (Mississippi State University; Washington State University), and JoVonn Hill (Mississippi State University)
- ***Displaced eco-engineers: How ant community assemblages respond to a recent invader and catastrophic wind disturbance.*** Ourania Nikolaidis (University of Georgia), James T. Vogt (USDA Forest Service-SRS), Brittany Barnes (University of Georgia), Simone Lim-Hing (North Carolina State University), Holly Munro (University of Georgia; National Council for Air and Stream Improvement), Dan Johnson (University of Georgia), Bronson Bullock (University of Georgia), and Kamal J. K. Gandhi (University of Georgia)
- ***Nutritional stress alters the physiology and host-location behavior of two classical biocontrol agents of the emerald ash borer.*** Vanshika Jindal (Louisiana State University), Rodrigo Diaz (Louisiana State University), Kranti Meher (Louisiana State University), and Todd D. Johnson (Louisiana State University)

From science to service: RNAi tools for tree pest management **Promenade C**

Organizers: Lynne Rieske-Kinney, Flávia Pampolini, and Morgan Knutsen (University of Kentucky)
Moderators: Flávia Pampolini, and Morgan Knutsen

- ***Overview and status of efforts at managing forest pests using gene silencing.*** Lynne Rieske-Kinney (University of Kentucky)

- ***The potential for RNAi based biopesticides to manage tree pests.***
  Flávia Pampolini (University of Kentucky) and Lynne Rieske-Kinney (University of Kentucky)

  [**Abstract:** RNA interference (RNAi) or double-stranded RNA (dsRNA)-mediated gene silencing is an innovative tool for pest management. Exogenous dsRNA induces targeted gene silencing, and disrupts protein function, causing insect mortality. Effective delivery of the dsRNA is a hurdle, particularly in systems with endophagous insects such as the emerald ash borer (EAB) (*Agrilus planipennis*) (Coleoptera: Buprestidae), that develops and feeds beneath the bark of ash trees, *Fraxinus* spp., causing rapid tree death. We evaluated uptake and bioactivity of dsRNA in green ash (*F. pennsylvanica*) to investigate the feasibility of delivery through the host plant. To assess dsRNA persistence and distribution, seedlings are exposed to EAB-specific dsRNA *via* root, stem and foliar application, followed by sectioning into different tissue types at selected time-points. RT-PCR and Sanger Sequencing are used to assess dsRNA recovery for each tissue type and time point. Results demonstrated *in planta* systemic spread and persistence of topically applied dsRNA up to 21 days for foliar spray and up to 30 days for root and trunk treatments. To evaluate the dsRNA bioactivity, neonate EABs were exposed to dsRNA sprayed seedlings and assessed for gene expression and feeding behavior by measuring the gallery area on the debarked seedlings. Results demonstrate gene silencing and a 24% (p=0.03) reduction in cambial consumption in treated seedlings. This study provides foundational proof-of-concept for delivery of RNAi to the target insect through the host plant, suggesting the feasibility of RNAi functioning as a sustainable approach for tree protection against EAB.]

- ***Rooted in precision: Delivering dsRNA for forest pest management.***
  Zachary Bragg (University of Georgia) and Lynne Rieske-Kinney (University of Kentucky)

- ***RNAi use in two exotic fungal pathogens of forest trees.*** Tyler Dreaden (USDA Forest Service-SRS), C. Dana Nelson (USDA Forest Service-SRS), Andrew Groover (USDA Forest Service-NRS), Anna Conrad (USDA Forest Service-NRS), Cornelia Wilson (USDA Forest Service-NRS), Thomas Michaels (USDA Forest Service-NRS), Carolyn Hanrahan (USDA Forest Service-NRS), Teaghan McAllister (USDA Forest Service-NRS), and Carolyn Pike (USDA Forest Service-SPTF), Ellen Crocker (University of Kentucky), Joshua Konkol (University of Kentucky), Mojtaba Zamani Faradonbeh (Purdue University) and Douglass Jacobs (Purdue University)

- ***Interactions of a transformed fungus designed to silence genes in southern pine beetle.*** Morgan Knutsen (University of Kentucky) and Lynne Rieske-Kinney (University of Kentucky)

  [**Abstract:** RNA interference (RNAi) is a natural cellular gene silencing process that can be manipulated to induce insect mortality. Effective large-scale delivery of the RNAi triggering mechanism remains a key challenge to its implementation as a pest management tool. To explore one potential delivery pathway, we assessed a facultative fungal associate of the southern pine beetle (SPB) transformed to express an SPB-specific double-stranded RNA (dsRNA) targeting an essential gene, comparing its growth and competitiveness to that of the wild-type isolate. The transformed fungus exhibited greater growth on MEA and overall produced larger stem lesions, though over time no differences in lesion size were evident. Both transformed and wild type isolates produced larger lesions than media controls. This study represents the first demonstration of a bark beetle fungal associate transformed for RNAi

delivery, offering insight into the feasibility of using fungal symbionts as vectors for RNAi-based forest pest suppression.]

- ***What's next?*** Lynne Rieske-Kinney (University of Kentucky)

12:00 – 1:30 PM **LUNCH – on your own**

1:30 – 3:00 PM **Concurrent Session 3**

United front, tangled roots: Confronting the challenges of invasive plant management across organizations **Promenade A**
Organizers and Moderators: Katlin DeWitt and Sal Flower (Virginia Department of Forestry)

- **Panel overview and introductions.** Katlin DeWitt (Virginia Department of Forestry) and Sal Flower (Virginia Department of Forestry)

  → *See page 18 for panel discussion questions*

- **Research aspect:** Jess Hartshorn (Central State University)
- **Federal angle:** Mohammad Bataineh (USDA Forest Service-SRS)
- **Local perspective:** Ryan Howell (River Parks Authority-Tulsa)
- **State experience:** Alexandra Blevins (Kentucky Division of Forestry)

Emerging innovations in forest health **Promenade B**
Organizers: Kendra Wagner (Rainbow Ecoscience) and Demian Gomez (Texas Forest Service)
Moderator: Kendra Wagner

- ***Applied chemical ecology: Utilizing semiochemicals to protect trees from bark beetles*.** Jackson Audley (University of California Davis) and Christopher Fettig (USDA Forest Service–PSWRS)
- ***Assessing fungicide options for controlling pecan diseases.*** Mustafa O. Jibrin (Oklahoma State University)
- ***Chitosan as a biostimulant for resistance against pitch canker and drought stress in* Pinus taeda.** Sarah Raborn (Mississippi State University) and Kristy M. McAndrew (Mississippi State University)

  [**Abstract:** Severe droughts are expected to increase in duration and frequency in the southeastern United States given climate change. Droughts are a major forest health concern and can cause mortality both directly and indirectly, but also threaten forest productivity by predisposing trees to pathogens that can reduce lumber quality and/or growth rates. *Chitosan*, a

deacetylated derivative of chitin, has garnered attention for its ability to enhance host resistance to *Fusarium circinatum* and mitigate abiotic stress caused by drought, but its efficacy is yet to be tested in southern yellow pines. This study evaluates the protective effects of foliar-applied chitosan on *Pinus taeda* seedlings subjected to biotic stress from *Fusarium circinatum*—the causal agent of pine pitch canker—and abiotic drought stress under controlled greenhouse conditions. Nursery-grown seedlings were assigned to either drought-stress or normal hydrologic environments before undergoing one of three treatments: 1) control, 2) chitosan application, and 3) chitosan application with *F. circinatum* inoculation. Chitosan was applied once weekly for four weeks at a concentration of 0.2–0.5% (w/v) via foliar spray, with pathogen inoculation or drought induction occurring one week after the initial application. *F. circinatum* was cultured in liquid broth and applied as a homogenized mycelial slurry directly into stem wounds, while drought stress was imposed by maintaining soil moisture at 30–50% of field capacity. Seedling responses were assessed through qualitative and quantitative metrics including: lesion progression, chlorotic index, resin exudation, mortality, height increase, stem diameter, and biomass ratio. Knowledge of chitosan efficacy in southern yellow pines will enhance forest management in the wood basket of the United States by promoting drought tolerance in an increasingly stressful climate and providing protection from biotic pests of loblolly pines.]

- ***Beech leaf disease and innovations in management*.** Kendra E Wagner (Rainbow Ecoscience), Andrew L. Loyd (Bartlett Tree Research Laboratories; Botanical Research Institute of Texas), Matthew A. Borden (Bartlett Tree Research Laboratories), Caitlin A. Littlejohn (Bartlett Tree Research Laboratories), Chad M. Rigsby (Bartlett Tree Research Laboratories; The Morton Arboretum), Beth Brantley (Bartlett Tree Research Laboratories), Mark Ware (Rainbow Ecoscience), Cory McCurry (Rainbow Ecoscience), and Kelby Fite (Bartlett Tree Research Laboratories)

- ***Validation of real time LAMP for* Bretziella fagacearum *detection and deployment of multiple oak wilt molecular diagnostic methods*.** Colton D. Meinecke (University of Georgia), Austin Brenek (Bartlett Tree Research Laboratories; Botanical Research Institute of Texas), Andrew L. Loyd (Bartlett Tree Research Laboratories; Botanical Research Institute of Texas), and Caterina Villari (University of Georgia)

  [**Abstract:** Oak wilt, caused by *Bretziella fagacearum*, is a destructive disease of *Quercus* species. Symptoms consist of leaf necrosis, branch dieback, defoliation, vascular discoloration, and mortality. Prompt management is crucial and involves laborious and expensive practices such as sanitation removal, proactive tree removal, root trenching, and/or fungicide injections. Due to these resource-intensive management tactics, accurate and timely diagnostics are critical. Recently developed molecular assays, including those using qPCR and LAMP approaches, have significantly advanced the fidelity and rapidity of oak wilt detection, but additional work is needed to assess the efficacy of these technologies among the variety of hosts and sample types encountered by forest health practitioners and diagnosticians. In this work, we describe the validation of a real time LAMP approach, and the comparative assessment of three diagnostic protocols, 1) qPCR detection from purified sample DNA, 2) colorimetric LAMP detection from purified DNA, and 3) real-time LAMP detection from both purified DNA and from crude DNA directly in the field. Using these approaches, we are determining the rates of detection from sapwood shavings, petioles, and nitidulid beetles collected from outbreak centers in Texas and Wisconsin. Results to date indicate differences in the sensitivity among the approaches, suggesting that no assay is universally effective, but that

each provides valuable data in specific operation contexts. Notably, we found that the petioles of symptomatic leaves are not only easy to collect, but also serve as a reliable sample type that yields detectable DNA by the methods tested here. With these findings, we provide valuable data and guidance to the diagnostic community.]

- ***Combating southern blight in landscape and nursery production through pathogen characterization and fungicide evaluation*.** Nar Ranabhat (University of Tennessee)

Open session 1 **Promenade C**
Organizer: Zachary Bragg (University of Georgia)
Moderator: Abby Ratcliff (North Carolina State University)

- ***Rearing, releasing, recovering, and redistributing predators of HWA: Recent adaptations and transitions of this long-time program*.** Mary Hoffman (Virginia Tech) and Aryanna James (Virginia Tech)
- ***A funny thing happened when looking for western strain silver fly predators released for HWA, we keep finding eastern strain silver flies instead*.**
  Aryanna James (Virginia Tech)
- ***The impacts of prescribed fire on the spread of laurel wilt in the Southeastern United States***. Shane Allan (Virginia Tech), Scott Salom (Virginia Tech), Adam Coates (Virginia Tech), and Carrie Fearer (Virginia Tech)

[**Abstract:**
Background

An impressive number of non-native invasive species have been introduced globally and are expected to further increase due to factors of global change including climate change, globalization, and other human activities. These non-native pests and pathogens have caused extensive alterations to forest disturbance regimes and an overall decrease in forest health. A staggering amount of research has been dedicated to understanding how to control these pests and pathogens and how to manage healthy forests after they have been altered. However, how these management methods reciprocally affect pests and pathogens is poorly understood.

A recent example of a non-native pest and pathogen is the pathosystem of laurel wilt (LW). This devastating fungal disease is caused by the ascomycete fungus *Harringtonia lauricola* and is vectored primarily through the redbay ambrosia beetle (*Xyleborus glabratus*). *X. glabratus* and other ambrosia beetle vectors of LW are attracted to trees via chemical and physical cues including stem diameter, host tree volatile profiles, and other vector semiochemicals. Once they detect trees, they bore into them to create galleries to complete their lifecycle within. Simultaneously, as these beetles tunnel spore carrying structures release *H. lauricola* within trees causing LW. Since *X. glabratus* first detection in 2002 near Port Wentworth, Georgia, LW has been confirmed in twelve states as far west as Texas and as far north as Kentucky and Virginia. The spread of this disease is mainly attributed to the short-distance contiguous flight so ambrosia beetle vector, however, long-distance non-contiguous spread of disease has also been attributed to transportation of infested or infected woody material. It is expected that LW will continue to spread throughout its host range of all native Lauraceae spp. in North America including important economically, environmental, and conservation species such as Avocado (*Persea amricana*), sassafras (*Sassafras albidum*), redbay (*Persea borbonia*), and pondberry (*Lindera melissifolia*). Currently management of LW is restricted to local management practices such as

macro-injections of fungicide and chipping of infested or infected woody materials. Without any large-scale management suitable in controlling LW this disease will likely spread throughout the eastern United States and possibly even reaching the west coast where it will threaten even more important Lauraceae spp. To prevent LW from spreading any further a better understanding of population dynamics ambrosia beetle vectors of *H. lauricola* and novel methods to manage LW need to be examined.

Project

One yet unstudied method in managing LW is prescribed burns. Generally, these low intensity, controlled burns could potentially control non-native pest and pathogens by promoting healthy forests by creating uneven aged mixed stands, reduce inoculum load through burning, and by causing physical and chemical changes to hosts that may be advantageous to host defenses. Specifically, for LW prescribed burns may help manage disease by promoting unfavorable host for vector detection and gallery formation by reducing average host stem diameter and changing host volatile profiles.

To better understand how prescribed burns affect the spread of LW and to determine if prescribed burns are affective at controlling LW our project will determine the rates of colonization, population, and emergence in ambrosia beetle vectors, and the presence of *H. lauricola* inside redbay tissue and ambrosia beetle vectors pre- and post-prescribed burns. Though this project is ongoing once completed this will serve as a novel study investigating how prescribed burns may influence insect-vectored forest disease and the first to explore the incidence of LW and population dynamics of ambrosia beetle vectors post LW endemic. Additionally, this study will potentially lead to new research questions exploring how changes in host volatile profiles post-prescribed burn may affect host detection in ambrosia beetle vectors. This project is ongoing, for information on the status of this project contact Shane Allan (sallan@vt.edu).]

- ***Using ecological indicators to monitor forest health***. Simone Lim-Hing (North Carolina State University)

- ***Comparative evaluation of predictive models for forecasting southern pine beetle outbreaks.*** Ebere Loretto Anozie (Clemson University), Bo Song (Clemson University), David Coyle (Clemson University), Shaowu Bao (Coastal Carolina University), Thomas Williams (Clemson University), Steven McNulty (USDA Forest Service-Southeast Climate Hub, EFETAC), Carlyle Brewster (Clemson University), Matthew Ayres (Dartmouth College), Carissa Aoki (Maryland Institute College of Art), Brian Williams (Clemson University), and Michael Gavazzi (USDA Forest Service-Southeast Climate Hub, EFETAC)

[**Abstract:** The eastern United States suffers significant losses from southern pine beetle (SPB, *Dendroctonus frontalis*) outbreaks. The extensive damage from SPB drives the need for predictive models, and it is essential to evaluate these models to inform management decisions. We conducted the performance evaluation of two predictive models: the zero-inflated Poisson (ZIP) model and the Southern Pine Beetle Outbreak Model v1 (SPBOM1). The actual spot (TSPOT) infestation data at the county level from 2020 to 2024 were used to compare models' predictive performance. The models generated yearly county-based maps of areas with high risk of SPB outbreaks across the southeastern US. The evaluation of errors included absolute error, mean absolute error, and root mean square error. The absolute error comparison between models determined the proportion of cases that resulted in minor errors. The analysis included regression of observations against log-transformed predictions and empirical cumulative distribution

function analysis, which were conducted following the spring operational scheduling. The regression diagnostics showed that SPBOM1 explained more variance in three out of five years, while ZIP explained more variance in two years from 2020 to 2024. The absolute-error contrast between ZIP and SPBOM1 showed negative values in four out of five years, as SPBOM1 produced more accurate results than ZIP in most cases, although the two models performed similarly in 2021. The empirical cumulative distribution functions were separated in only one year (2020). Visual assessments revealed that SPBOM1 matched TSPOT values better at low intensity levels, but ZIP occasionally performed better at higher TSPOT levels. The operational models have different error behaviors because SPBOM1 consistently performs at low intensity levels. At the same time, ZIP produces clusters of minor errors together with occasional significant prediction failures. Early-season planning should utilize SPBOM1, but ZIP is more suitable for trap-informed refinement. Future research should investigate ensemble approaches and remote-sensing-enhanced strategies to further enhance the understanding of these phenomena.]

3:00 – 3:30 PM **BREAK** **Foyer**

3:30 – 5:00 PM **Concurrent Session 4**

From seedling to old growth: How to succeed at any career stage **Promenade A**
Organizer and Moderator: Carrie Fearer (Virginia Tech)

- ***Taking root*.** Simone Lim-Hing (North Carolina State University)
- ***Spreading your branches*.** Carrie Fearer (Virginia Tech)
- ***Sowing your seed*.** Steve Grantham (Up with Trees Inc.)
- ***Closing the canopy gap*.** Scott Salom (Virginia Tech)
- **Panel discussion and questions.** Carrie Fearer (Virginia Tech)

Pirates of the Appalachians and the curse of the black pearl: White pine dieback in the Southeast **Promenade B**
Organizer: Jacob Betzen (USDA Forest Service-FHP)
Moderator: Albert (Bud) Mayfield (USDA Forest Service-SRS)

- ***More chemicals, more trials, and more tribulations with white pine dieback*.**
  Brian Heath (North Carolina Forest Service), Brittany Barnes (University of Georgia), Elizabeth McCarty (University of Georgia), Kamal Gandhi (University of Georgia), Kendra Wagner (Rainbow Ecoscience), Patrick Anderson (Rainbow Ecoscience), Tony Goad (Rainbow Ecoscience), Andrew Allen (Rainbow Ecoscience), Jacob Betzen (USDA Forest Service-FHP), Brandon Keener (North Carolina Forest Service), and Hunter Cook (North Carolina Forest Service)

  [**Abstract:** Eastern White Pine (*Pinus strobus*) is suffering from dieback symptoms caused by an insect/disease complex. The white pine bast scale (*Matsucoccus macrocicatrices*) creates a wound on a tree, and then the pathogen (*Caliciopsis pinea*) becomes established at this site and

creates a canker. This complex is known as White Pine Dieback. Branches at the base of the pine start dying from numerous cankers, and this will continue in an upward trend throughout the tree until mortality occurs. Although primarily a timber species, individual white pine trees can be desirable around home sites, parks, campgrounds, and other community areas. The goal of this study is to determine if insecticides and/or a fungicide can reduce the amount of scale insects or cankers on these impacted trees. An accurate chemical recommendation will give landowners options to potentially save individual white pines on the landscape. Over the past 2 years 30 individual white pines have been selected for this study. Branches were cut and examined to determine scale populations before treatments began. The following chemical active ingredients were used for this study: imidacloprid, dinotefuran, chlorantraniliprole, and flutriafol. A combination of soil drench and tree injection applications were used along with leaving an untreated control tree for each replication. One year after treatment additional branches are cut to count scale populations to determine if these chemical treatments are effective. After several years of research, this study will determine the efficacy of chemical applications to combat White Pine Dieback.]

- ***Silviculture, monitoring and keeping eastern white pine out of Davy Jones' locker*.** Albert (Bud) Mayfield (USDA Forest Service-SRS), Robert Jetton (North Carolina State University), Kyle Cavender (North Carolina State University), Jacob Betzen (USDA Forest Service-FHP), Brian Heath (North Carolina Forest Service), and Bryan Mudder (USDA Forest Service-SRS)

- ***Utilizing molecular tools to inform our understanding of White Pine Dieback epidemiology*.** Hannah Petronek (University of Georgia), Robert Jetton (North Carolina State University), Albert (Bud) Mayfield (USDA Forest Service-SRS), Brian Heath (North Carolina Forest Service), Brittany Barnes (University of Georgia), Kamal Gandhi (University of Georgia), and Caterina Villari (University of Georgia)

  [**Abstract:** White Pine Dieback (WPD) is an insect-disease complex causing cankering, branch dieback, and even mortality of eastern white pine (*Pinus strobus*). The hypothesized disease cycle posits that feeding wounds created by the white pine bast scale (*Matsucoccus macrocicatrices*) predispose trees to infection by the fungal canker pathogen *Caliciopsis pinea*. Recently, forest health professionals have reported an increased incidence and severity of WPD in the southern Appalachian region, drawing attention to an otherwise understudied pathosystem. Previous studies have not addressed the interaction between the insect and the fungus. We propose several studies to improve diagnostic efficiency of *Caliciopsis* cankers, clarify insect-fungus relationships, and evaluate the genetic diversity of *C. pinea*. Loop-mediated isothermal amplification (LAMP) assays will be designed to distinguish two species—*C. pinea* and *C. moriondi*. DNA metabarcoding studies will be conducted to evaluate the mycobiome associated with insects. Lastly, a population genomics study will be designed to assess the population structure and diversity of *C. pinea* across its range, investigating its correlation with heightened disease severity in southern Appalachia. These studies aim to reveal the mechanism by which scale insects predispose trees to infection, provide insights into the epidemiology of the fungus, and inform management practices of *P. strobus*.]

- ***To catch a spore: Using air sampling to study pathogen biology in white pine forests*.** Becky Harkness* (Michigan State University) and Timothy Miles (Michigan State University)

  **virtual presentation*

Open session 2 **Promenade C**

Organizer: Zachary Bragg (University of Georgia)
Moderator: Katy Moretti (Clemson University)

- ***Impact of soil type and drought on the growth and volatile production of loblolly (Pinus taeda L.) and longleaf pine (Pinus palustris Mill.), two hosts of southern pine beetle (Dendroctonus frontalis Zimmermann).*** Todd D. Johnson (Louisiana State University), Daniel Debutts (Louisiana State University), Lewis Gaston (Louisiana State University), Winter Sheline (Louisiana State University), Vanshika Jindal (Louisiana State University)

- ***Using SPBOM 1 in prediction of southern pine beetle outbreaks for 2025*.** Bo Song (Clemson University), Thomas Williams (Clemson University), Steven McNulty (USDA Forest Service-SRS), Shaowu Bao (Coastal Carolina University), Brian Williams (Clemson University), and Michael Gavazzi (USDA Forest Service-SRS)

- ***From canopy to code: A multi-scale approach to managing brown spot needle blight in loblolly pine*.** Zachary Bragg (University of Georgia), Rhys Eshleman (University of Georgia), Colton Meinecke (University of Georgia), Katie McKeever (US Forest Service-FHP), Jane Stewart (Colorado State University), Bronson Bullock (University of Georgia), Stephen Kinane (University of Georgia), Helen Bothwell (University of Georgia), and Caterina Villari (University of Georgia)

[**Abstract:** Over the last decade, brown spot needle blight (BSNB), caused by the native fungal pathogen *Lecanosticta acicola*, has become an emerging concern in loblolly pine (*Pinus taeda*) production systems across the Southeastern United States. Historically associated with longleaf pine ecosystems, *L. acicola* has recently been found in association with large-scale needle-disease outbreaks, contributing to significant foliar damage and raising concerns about the impacts on long-term growth and yield. Despite its increasing prevalence, little is known about how BSNB influences stand productivity nor are there effective management strategies in place to deal with this disease at the landscape level for loblolly pine.

To address these gaps, we are applying a multi-scale framework that integrates field evaluation, transcriptomics, and genomics to better understand the impact of BSNB and explore potential resistance mechanisms.

At the stand level, we are quantifying the effects of foliar disease on productivity through long-term evaluation and monitoring efforts. Field sites in southern and northwestern Alabama were selected as paired stands (symptomatic vs. non-symptomatic) with comparable age, density, and management history, allowing direct comparison between healthy and BSNB-infected stands. Within each stand, measurements of leaf area index (LAI) and canopy disease severity are collected twice per year, corresponding to peak infection periods in spring (April) and fall (October). Tree height and diameter at breast height (DBH) are measured annually during the dormant season. These data will be incorporated into a growth and yield model to quantify the impact of BSNB and establish long-term baselines for assessing disease-driven changes in forest productivity.

On the molecular scale, transcriptomic analyses are being conducted to characterize host response following infection. Fascicles from resistant and susceptible loblolly pine families (N = 432) were collected at six time points post-inoculation (1, 2, 4, 8, 16, and 38 days) and processed for RNA sequencing. Differential expression and pathway analyses will be used to

identify defense-related processes, transcripts associated with resistance or susceptibility, and to characterize disease progression over the time scale. Although the primary focus is on the loblolly pine response, mRNA sequences from *L. acicola* in our samples may provide additional insight into fungal gene expression and activity during infection.

Complementary to this, a genome-wide association study (GWAS) is being conducted to characterize the nature of resistance in this system and identify loci contributing to resistance. As part of an ongoing high-throughput screening trial, disease severity rankings were assigned to seedlings from 86 commercial families (N = 946) selected to capture natural variation in susceptibility. These seedlings are being genotyped using the Thermo Fisher Axiom™ Pita50K SNP array. Following genotype calling and quality control, marker-trait association analyses will be performed using mixed linear models to detect genomic regions linked to disease resistance.

By integrating canopy-scale productivity assessments with molecular and genomic analyses, this research aims to quantify the impact of BSNB on our southern forests and uncover the mechanisms of resistance to identify molecular markers that can be incorporated into loblolly pine breeding programs. Through these efforts, we hope to inform the deployment of resistant genotypes and guide management strategies to sustain the health and productivity of southern pine planted forests.]

- ***The forest is for everyone: A crash course on empowering LGBTQIA+ foresters in the field, the lab, and beyond.*** Rhys Eshleman (University of Georgia)
- ***Forestry Images – What's new and what's next.*** Chuck Bargeron (University of Georgia – Center for Invasive Species and Ecosystem Health) and Joseph LaForest (University of Georgia – Center for Invasive Species and Ecosystem Health)
- ***Go figure! Creating research visuals in Microsoft PowerPoint.*** Abby Ratcliff (North Carolina State University)

5:00 – 6:00 PM **Closing Business Meeting** **Promenade CD**

Organizer: Kamal J.K. Gandhi (University of Georgia)

7:00 – 9:00 PM **Banquet** **Promenade AB**

Insect Photo Salon Awards

Organizers: Brittany Barnes (University of Georgia) and Abby Ratcliff (North Carolina State University)

Graduate Student Presentation Awards

Organizers: Ashley Schulz (Mississippi State University) and Carrie Fearer (Virginia Tech)

Roger F. Anderson Award

A.D. Hopkins Award

Panel Questions for Discussion:

Thursday, July 17 – Concurrent Session 3

1:30 – 3:00 PM **United front, tangled roots: Confronting the challenges of invasive plant management across organizations** **Promenade A**

Mohammad Bataineh (USDA Forest Service-SRS)
Jess Hartshorn (Central State University)
Ryan Howell (River Parks Authority)
Alexandra Blevins (Kentucky Division of Forestry)

- *How do you prioritize which invasive species, populations or contexts to focus on for treatment and management?*
- *What specific knowledge gaps do you see in invasive plant management that could be filled by conducting research?*
    - *How can we facilitate more actionable research in this field, and what are the barriers to applying the existing research?*
- *What role does community involvement currently play in invasive plant management in your context? What challenges do you face in engaging the most relevant demographics?*

→ *Panel questions continue on next page*

- *What do you see as the primary points of conflict between human priorities like agriculture and urban development and efforts to prevent the proliferation of invasive species? How do you think we can better integrate these priorities?*
- *What do you consider the long-term implications of continually using herbicides to manage invasive plants? How do you factor them into your work?*
- *How do you think legal regulations could better support effective invasive species management? What would it take to make this happen?*
- *Given how large and ever-growing invasive species problems are, how do you foster hope for the future of invasive species management for yourself and for your community?*

As time allows:

- *Have you seen climate change impacts on invasive species dynamics in your region? How can management approaches respond to these changes? How can novel research support these decisions?*
- *How can we better integrate indigenous knowledge and perspectives into invasive species management? Do you have any examples of this in your context?*

2025 SFHWC Poster Session

Wednesday, July 16th, 6:00-8:00 PM | Promenade Foyer

Organizer: Forest Palmer (Clemson University)

1. **Environmental drivers of brown spot needle blight emergence in Southeastern US loblolly pine plantations.** Carolyn R. Cornell (Colorado State University), Kristi Wharton (USDA Forest Service-SRS), Jane E. Stewart (Colorado State University), and Rabiu Olatinwo (USDA Forest Service-SRS)

   [**Abstract:** Brown spot needle blight (BSNB), caused by the fungus *Lecanosticta acicola*, is an emerging threat to pine forest ecosystems globally. High disease severity of BSNB has been observed in loblolly pine plantations across the Southeastern US, resulting in substantial declines in productivity. However, environmental drivers increasing disease outbreaks remain unclear. To investigate these factors, endophytic fungal communities in symptomatic and asymptomatic needles from 60 trees in six loblolly pine plantations in central Louisiana were examined. Soil samples were collected to assess differences in soil microbial communities with increasing disease severity. The Shannon diversity and beta-diversity of the needle fungal communities were significantly lower in symptomatic needles compared to asymptomatic needles. The asymptomatic fungal needle communities showed greater site-to-site variation than the symptomatic communities. Additionally, the year of planting interacted significantly with disease severity, further influencing needle fungal diversity. A higher relative abundance of *L. acicola* was observed in trees with greater disease severity, and *L. acicola* and five *Rhytismataceae* ASVs were indicator species of symptomatic communities. While soil bacterial communities showed no significant differences with disease severity, several ectomycorrhizal taxa were lost at the highest disease severity levels. Greater precipitation totals were associated with the greatest disease severity. Similarly, minimum VPD, temperature, and precipitation were associated with the symptomatic fungal diversity of needles. These findings highlight the role of environmental factors, particularly the effects of moisture and temperature on *L. acicola and* fungal communities, emphasizing the need for further research into how future climates may exacerbate fungal needle diseases.]

2. **MCH-based semiochemical interruption of spruce beetle, *Dendroctonus rufipennis*, in Alaska and Colorado.** Jackson P. Audley (University of California Davis; USDA Forest Service-PSWRS) Christopher J. Fettig (USDA Forest Service-PSWRS), Jason E. Moan (Alaska Division of Forestry and Fire Protection), Jessie Moan (USDA Forest Service-FHP), Steve Swenson (USDA Forest Service-FHP), Leif A. Mortenson (USDA Forest Service-PSWRS), and Agenor Mafra-Neto (ISCA Inc.)

3. **Estimating impact of brown spot needle blight on loblolly pine using 3-PG growth model.** Tyler Dreaden (USDA Forest Service-SRS), Rabiu Olatinwo (USDA Forest Service-SRS), John Riggins (Oregon State University), and Carlos Gonzalez-Benecke (Oregon State University)

4. **Antennal responses of the cedar bark beetle, *Phloeosinus dentatus*, to host phloem, sapwood, and heartwood odors.** William Shepherd (USDA Forest Service-SRS) and Brian Sullivan (USDA Forest Service-SRS)

[**Abstract:** The western cedar bark beetle, *Phloeosinus punctatus*, is a potential emerging mortality agent of giant sequoia (*Sequoiadendron giganteum*). We explored the chemical ecology of the congeneric *P. dentatus*, a secondary pest of eastern red cedar (*Juniperus virginiana*), in an attempt to identify olfactory stimulants which may be shared by *P. punctatus* and could be used in synthetic lures for one or both species. Using gas chromatography-electroantennographic detection (GC-EAD), we recorded antennal responses to various volatile compounds associated with bark beetles and their conifer hosts. Antennally-active compounds included *alpha*-pinene, *beta*-pinene, 2-methyl-3-buten-2-ol, 3-methyl-3-buten-1-ol, 3-hexanone, 1-hexanol, 2-hexanol, frontalin, sulcatol, *exo*-brevicomin, *endo*-brevicomin, chrysanthanone, fenchol, (1R)-(+)-norinone, myrtenal, bornyl acetate, 4-allylanisole, verbenone, myrtenol, and 2-phenylethanol. We also tested *P. dentatus* antennal responses to three different eastern red cedar tissues: heartwood, sapwood, and phloem. Two odor stimulants were identified in heartwood aerations: *alpha*-pinene and thujopsene. *Phloeosinus dentatus* antennae also responded to thujopsene in sapwood aerations; isopinocamphone and verbenone in phloem aerations; and *alpha*-pinene, *beta*-pinene, 1-hexanol, and methyl-carvacrol in both sapwood and phloem aerations. While the largest responses recorded were to *alpha*-pinene, which was present in high concentrations in the sapwood and phloem samples, *P. dentatus* also responded to very low concentrations of 1-hexanol and verbenone. Additional laboratory and field experiments have shown the sapwood, and especially phloem tissue, to be attractive to *P. dentatus*. Also, no likely aggregation pheromone has been found for *P. dentatus*, suggesting that the beetles use one or more antennally-active eastern red cedar volatiles to locate suitable hosts.]

5. **Assessing the impact of midstory removal on ground-dwelling insect communities and habitat structure.** Connor Foley (University of Arkansas), Olivia Burdine (University of Arkansas), Drew Casey (University of Arkansas), Maggie Herrmann (University of Arkansas), Mike McGowan (University of Arkansas), Kyle Cunningham (Arkansas State Department of Agriculture), and Natalie Clay (University of Arkansas)

6. **Biological invasion detection via sentinel gardens in Alabama.** Annakay Newell (Auburn University), Lori G. Eckhardt (Auburn University), Jessica Baldwin (Auburn University), Patricia Gordon (Auburn University), and Logan Schatz (Auburn University)

[**Abstract:** Infectious diseases of plants are an ongoing and increasing threat to international biosecurity, with a wide range of implications. These outbreaks in plant populations have devastating economic, environmental and societal consequences. Sentinel garden plantings in Alabama will function as attractants for invasive plants that could pose a threat to North American forests, acting as an early warning beacon which is essential to prevent widespread transmission. The monitoring of vegetation near major ports of commerce facilitates the early identification of forest pest and pathogens; however, the capacity to carry out this surveillance is often limited. Given that Alabama hosts a major port of entry and is situated near urban population centers, there exists a substantial opportunity to involve urban communities in bio-

surveillance efforts, thereby enhancing the capacity for the early detection of emerging pests and pathogens. Sentinel plants present a proactive approach to biosecurity in a manner that promotes community involvement and education.]

7. **Fertilization effects on biodiversity and trophic diversity in a Panama tropical forest: a case study with ants.** Drew Casey (University of Arkansas), Natalie Clay (University of Arkansas), and Michael Kaspari (University of Oklahoma)

8. **Confirmation of *Lecanosticta acicola* to monitor distribution of brown spot needle blight on loblolly pines in the Southeastern United States.** Elizabeth Middleton (USDA Forest Service-SRS; Oak Ridge Institute for Science and Education), Daniel Gonzalez-Rodriguez (USDA Forest Service-SRS; Oak Ridge Institute for Science and Education), Jaesoon Hwang (USDA Forest Service-FHP), and Rabiu Olatinwo (USDA Forest Service-SRS)

9. **Pathogenic fungi associated with *Cornus florida* (Dogwood) decline in Louisiana.** Daniel Gonzalez-Rodriguez (USDA Forest Service-SRS; Oak Ridge Institute for Science and Education), Elizabeth Middleton (USDA Forest Service-SRS; Oak Ridge Institute for Science and Education), Jaesoon Hwang (USDA Forest Service-FHP), and Rabiu Olatinwo (USDA Forest Service-SRS)

10. **Remote sensing detection and severity mapping for brown spot needle blight in southeastern pine forests.** Swati Singh (Auburn University), Lana L. Narine (Auburn University), Lori G. Eckhardt (Auburn University), and Janna R. Willoughby (Auburn University)

[**Abstract:** Brown Spot Needle Blight (BSNB) is an emerging needle disease affecting loblolly pine (*Pinus taeda*) in the southeastern United States, with implications for timber productivity and forest health. Conventional detection methods are labor-intensive, time-consuming, and limited in spatial coverage. Remote sensing may offer scalable, efficient alternatives for early detection and severity assessment; however, its direct application to BSNB remains poorly explored. This study had two objectives: (1) to conduct a systematic review of remote sensing-based approaches for BSNB and similar needle diseases, and (2) to evaluate the efficacy of unmanned aerial vehicle (UAV)-based multispectral imaging combined with machine learning for BSNB severity mapping. For the review, a bibliometric analysis was performed using the Web of Science database and VOSviewer to identify thematic trends, research gaps, and methodological limitations. For the case study, multispectral UAV data were collected over *P. taeda* stands in Alabama. Individual trees were classified into four BSNB severity categories (healthy, early, moderate, severe) using a Support Vector Machine (SVM) classifier. Spectral analysis of processed multispectral bands and derived vegetation indices identified the Normalized Difference Vegetation Index (NDVI) and Soil-Adjusted Vegetation Index (SAVI) as the most effective predictors of BSNB severity. The classification models achieved high accuracy, with SVM reaching 94.79% in Washington County and 94.94% in Cullman County, and Kappa coefficients ranging from 0.80 to 0.92. Given the limited research on UAV-based BSNB detection, this study presents a structured framework that integrates multispectral remote

sensing and machine learning for enhanced disease monitoring and forest health assessment. The results demonstrate that UAV-derived spectral data, combined with machine learning algorithms, can be used to accurately classify BSNB severity at the tree level. Overall, findings from this study highlight critical gaps in BSNB remote sensing and potential of low-cost multispectral UAV data disease monitoring.]

11. **Investigating riparian soil-plant nutrient dynamics in forested and agricultural land uses along the Ouachita River.** Maggie Herrmann (University of Arkansas), Michelle Evans-White (University of Arkansas), Sally Entrekin (Virginia Tech), and Natalie Clay (University of Arkansas)

    [**Abstract:** Rising salinity in soils and freshwater is a global problem that threatens freshwater services like drinking water, fishing, and irrigation water for agriculture. Agriculture is a major nonpoint source contributor for sodium (Na) to riparian and aquatic ecosystems through some irrigation and fertilization practices. Additionally, livestock in pastures can significantly increase soil salinity and runoff into streams through increased Na inputs from excreta and egestion. These Na sources can directly enter streams through subflow, runoff, and groundwater inputs, and can negatively impact the health of sensitive freshwater biota, terrestrial microbi-detritivores, riparian vegetation, and the suite of ecosystem services these biota provide. Woody plants, specifically, are some of the biota most impacted by soil salinization, as Na is a non-essential nutrient for plants that when present even at low concentrations can negatively impact all stages of plant fitness from growth and development to photosynthesis and reproduction. To avoid salt stress, plants have developed strategies to either take up and utilize Na, tolerate it, or find ways to exclude it. Our study seeks to test 1) Na concentration in the leaf tissues of several riparian woody species in riparian forests and agricultural buffers, 2) Na content of riparian forest and agricultural buffer soils, and 3) freshwater nutrient concentration and conductivity at six paired forested sites and agricultural buffer sites (3 of each per state) along the Ouachita River in both Louisiana and Arkansas (N=12 sites). Preliminary paired analyses showed that mean water Na concentrations at agricultural buffer sites (13478.54 ± 7941.77 ppb) was ~1.6-fold greater ($T(5) = -2.53$, $p = 0.052$) than forested sites (8466.65 ± 5151.16 ppb) along the same river corridor. Furthermore, preliminary results of the top five most common species sampled identified three species: *Quercus lyrata* (Overcup Oak), *Platanus occidentalis* (American Sycamore), and *Quercus nigra* (Water Oak) that had the largest variation in foliar Na (Coefficients of Variation: 62.19, 51.49, and 50.80 respectively) suggesting they not only store and tolerate a wider range of Na, but may also be strong candidates for remediation of saline soils. The final results of this research may be used by land managers and farmers alike to better inform riparian buffer species selection and will provide further evidence on how terrestrial and aquatic ecosystems respond to salinity.]

12. **Characterizing pollinator abundance and diversity as a function of midstory removal in Arkansas oak forests.** Olivia Burdine (University of Arkansas), Mike McGowan (University of Arkansas), Kyle Cunningham (University of Arkansas), Maggie Herrmann (University of Arkansas), and Natalie Clay (University of Arkansas)

13. **Efficacy of commercially available insect repellents against the eye gnat (*Liohippelates pusio*).** Leela Hospach (Clemson University), Kier Klepzig (Jones Center at Ichauway), and Jess Hartshorn (Clemson University)

14. **Spectroscopy as a tool for detecting in situ fir resistance to an invasive adelgid.** William Parrott (Virginia Tech), Corey Green (Virginia Tech), Justin Whitehill (North Carolina State University), and Carrie Fearer (Virginia Tech)

    [**Abstract:** Since 1956, Fraser fir (*Abies fraseri*, (Pursh) Poir.) populations in the southeastern Appalachian Mountains have been under threat from the balsam woolly adelgid (*Adelges piceae*, Ratz.). This is troubling, as Fraser fir is not only an economically significant crop in the Christmas tree industry, but also an endangered species in its native range. As such, there are strong incentives to develop techniques that can guide management of balsam woolly adelgid infestations. Recent studies suggest that near-infrared (NIR) spectroscopy can be applied *in situ* to detect chemical characteristics of plant tissues, especially those relating to resistance within host-pest systems. In this study, a portable NIR spectrometer, the NeoSpectra spectral scanner, and machine learning models were used to see if differences in constitutive chemical defenses were detectable between tolerant and intolerant Fraser fir based on spectral data. The phloem and needle tissue of 99 Fraser fir trees of known resistance classes (tolerant, somewhat tolerant, intolerant) were scanned *in situ* in June and August of 2024. The resulting reflectance data was then run through a classification pipeline in R that employed support vector machine, random forest, and variable reduction models as well as sparse partial least squares discriminant analysis (SPLSDA). Outputs from the models suggested that the differences were detectable with varying levels of accuracy, depending on the tissue type scanned and number of resistance classes defined. Most of the highest-performing models were based on phloem tissue and employed only two classes (tolerant and intolerant); these were able to classify tolerant fir with accuracies ranging from 70.94% and 90.74%. The results suggest that differences in constitutive chemical defenses between Fraser fir of different tolerance classes are detectable *in situ* using NIR spectroscopy. Consequently, further research should be conducted to couple models with portable spectrometers in a way that can be applied by land managers.]

15. **Genomic and evolutionary divergence of pathogens causing brown spot needle blight in *Pinus* species.** Temitope R. Folorunso (Auburn University), Gabriel Amorim de Albuquerque Silva (Auburn University), Lori G. Eckhardt (Auburn University), and Janna R. Willoughby (Auburn University)

16. **Branching out: Elm zigzag sawfly finds a new host in *Zelkova*.** Kelly Oten (North Carolina State University), Abby Ratcliff (North Carolina State University), and Kathleen Knight (USDA Forest Service-NRS)

17. **Attractants of a cedar beetle, *Phloeosinus dentatus*.** Brian T. Sullivan (USDA Forest Service-SRS) and William P. Shepherd (USDA Forest Service-SRS)

18. **Yellow-legged hornet (*Vespa velutina*): An invasive pest may have a devastating impact on both managed and wild bees.** Predeesh Chandran (Clemson University) and Stephen Cavin (Clemson University)

19. **Early results of fire effects on brown spot needle blight of mature, actively managed, loblolly pine in southeastern Arkansas, USA.** Hunter Webb (University of Arkansas at Monticello), Dalton Weatherly (University of Arkansas at Monticello), Corbin Armon (University of Arkansas at Monticello), Michael Blazier (University of Arkansas at Monticello), Jaret Rushing (University of Arkansas at Monticello), and Laura Sims (University of Arkansas at Monticello)

[**Abstract:** Brown spot needle blight (BSNB), caused by the fungal pathogen *Lecanosticta acicola,* affecting loblolly was first reported many decades ago in the southern US from 1949-1950. The emergence of *L. acicola* as a problem on loblolly pine (*Pinus taeda*) more recently in the southern US (first reported in 2016), has remained as a sustained and growing problem especially in the west gulf including Arkansas. Prescribed fire with appropriate intensity and duration is a notable management technique for controlling many different types of plant pathogens. Herein we consider its utility to manage BSNB in mature stands of previously thinned loblolly pine in southeast Arkansas. One stand with moderate to heavy infestation in Drew County, Arkansas was burned on March 13, 2025. The prescribed fire (lasting 45 minutes) was conducted within a 20-acre pine plantation block that had been previously thinned in 2022. Post-fire 78 loblolly pine trees were categorized and tagged. For each tree, we recorded several variables (Table 1): scorch height, total height, height to live crown, diameter at breast height, and survival post bud break, and canopy needle condition. To assess if fire helped to remove impacted foliage, needle samples were collected from around the base of each tree (May 2,2025) as approximately 56% of the stand the canopies turned burn/ defoliated post fire. Scorch height reflects the vertical extent of fire impact on the tree trunk, and had an average value of 7.9 ft., ranging from 0.5 ft. to a maximum of 18.8 ft. Needle samples collected from around the base of 52 of the 78 trees have been evaluated for BSNB using a conventional PCR approach. It was found that: 50 samples were positive (96%) and 2 were negative (4%) for the pathogen. Post-fire 100% of measured trees budded out and grew. Scorch heights, suggested spatial heterogeneity in fire behavior, which may influence post-fire recovery and pathogen response as well. “Green trees” tended to be towards the edges which may mean that not as much of this foliage was removed and could be a source of future inoculum within the stand (and a target for future monitoring). We will continue to evaluate prescribed fire for its potential to help manage BSNB and improve resiliency in this and unthinned and larger tracts, as initial findings support the notion BSNB disease severity is reduced after a moderate to high intensity, rapid dormant season prescribed fire in mature loblolly pine stand in southeast Arkansas, USA.]

20. **Pairing RNAi induced gene-silencing and classical biological control for EAB management.** Megan Anaskevich (University of Kentucky), Flávia Pampolini (University of Kentucky), and Lynne K. Rieske (University of Kentucky)

[**Abstract:** Since its first detection in the United States in 2002, the emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae), has been responsible for the death and decline of millions of ash (*Fraxinus* spp.), an ecologically and economically important genus. Current biological control programs alone have been ineffective in establishing populations capable of suppressing the spread of EAB, calling for the need for an innovative pest management approach. Gene silencing utilizing the RNA interference (RNAi) pathway is an emerging biopesticide which demonstrates high efficacy and specificity towards EAB. Coupling classical biological control with RNAi induced gene silencing triggered by the introduction of dsRNA shows promise. To determine if they can be used together effectively, I am evaluating the

compatibility of the use of RNAi through foliar applications of the triggering mechanism for EAB-specific gene silencing with the classical biological control agent, *Tetrastichus planipennisi* Yang (Hymenoptera: Eulophidae). My work begins with knowing how to synchronize foliar applications of EAB-specific dsRNA with EAB development and *T. planipennisi* release. I began by using small diameter ash (~0.6 cm diameter) to evaluate EAB larval development time. This was done by artificially infesting ash saplings (n=5) under greenhouse conditions then destructively sampling a subset at pre-determined intervals to evaluate larval development. After determining when the larvae reach a susceptible stage for *T. planipennisi* oviposition, I will treat the saplings with a foliar spray of EAB-specific dsRNA to then evaluate the persistence of dsRNA within ash tissues and parasitization rate of larvae. My work will address knowledge gaps pertaining to the compatibility of dsRNA applications with classical biological control programs, providing an additional tool to protect our ash resources.]

Minutes of the SFHWC Opening Business Meeting
Tuesday, July 15, 2025

Hyatt Regency Tulsa Downtown
Tulsa, Oklahoma

Chair Kamal Gandhi called the 64th meeting of the Southern Forest Health Work Conference to order at 1:29 PM, following a welcome to Tulsa and overview of Oklahoma forests by Steve Grantham, Up With Trees. Chair Gandhi welcomed everyone to this year's meeting and thanked all of the organizers. She asked first-time attendees to stand and introduce themselves. No SFHWC members were known to have passed away since the 2024 meeting, so there was no moment of silence observed. Members were invited to share announcements of professional transitions (Ignazio Graziosi recently started in a faculty position at University of Georgia) or retirements (Jim Meeker, Paul Merten, Dan Miller, Dana Nelson, and Brian Strom).

Reports

Secretary-Treasurer Will Shepherd reported that the minutes of the 2024 meeting in Greenville, South Carolina are available in the Proceedings on the SFHWC website. Financially, SFHWC had a checking account balance of $17,058.49 on 12/31/24. Income for the Greenville meeting exceeded expenses by $12,703.55. SFHWC 2025 has been approved for a total of 16.5 Continuing Forestry Education (CFE) credits by the Society of American Foresters (SAF). Will informed attendees that he did not have access to SFHWC emails this week. He let everyone know that the hotel was offering a reduced-priced option for breakfast and lunch. Will also announced that new programs with a printing error fixed were now available and reminded everyone that registration continues after the opening business meeting.

Todd Johnson read the Historian's Report (see attached). He thanked previous SFHWC Historian, Paul Merten, and noted that this was the first meeting ever held in Oklahoma.

A.D. Hopkins Award – Bud Mayfield, Chair, reported that the Hopkins Award committee has agreed on a recipient, to be announced at the Thursday banquet. He also talked about the need to produce additional "Hopkins frames," which are traditionally made of wormy chestnut wood. Each frame contains a picture of, and letter written by A.D. Hopkins and is presented to the current year's Hopkins Award recipient. Bud said that we would try to find a SFHWC volunteer to construct the new frames before we hire an outside company.

Roger F. Anderson Award – Lynne Rieske-Kinney, Chair, said that the award's recipient would be announced at the Thursday banquet.

Resolutions – Kamal Gandhi reported that there are no resolutions pending at this time.

Website – Elizabeth McCarty told everyone to submit photos for the website.

Social Media – Courtney Johnson not present. Kelly Oten announced that SFHWC now has Instagram and Bluesky accounts. She also said that group photos would be delayed until Wednesday morning.

Theses and Dissertations – David Kulhavy not present.

Food Drive – Will Shepherd asked everyone to visit the registration table to donate non-perishable food items or money for SFHWC's annual food drive. All donations will be sent to the Regional Food Bank of Oklahoma.

Field Trip – Local Arrangements Chair, Dieter Rudolph, announced details for this year's field trip on Wednesday afternoon to the Turkey Mountain Urban Wilderness Area. Vans will be available for transportation.

Frustrana Cup – Coordinator Abby Ratcliff not present. Kelly Oten asked everyone to meet on Wednesday afternoon at NEFF Brewing for a cornhole tournament.

Frontalis Cup – Bob Coulson announced the formal end of the Frontalis Cup golf tournament at SFHWC.

Poster Session – Organizer Forest Palmer asked everyone to attend the Wednesday night poster reception. Poster setup can begin immediately.

Graduate Student Session – Ashley Schulz, Graduate Student Session Coordinator, not present. Zach Bragg invited everyone to the session on Wednesday morning.

Old Business

Brian Sullivan announced that current donations to the Wakarchuk Student Development Fund have been invested and will be earning around 5% each year. As the Wakarchuk Fund Committee, he and Lynne Rieske-Kinney are developing a plan to solicit nominations and give out an annual monetary award to a deserving student(s), beginning in 2026. They are still looking for input from the membership.

NAFIWC 2026 has been canceled.

SFHWC 2026 – Chair Gandhi announced that next year's meeting will be held on Jekyll Island, Georgia, 4-6 August 2026. Brittany Barnes, Kamal Gandhi, Kier Klepzig, Tom Sheehan, and Caterina Villari will be the Local Arrangements Co-Chairs. She asked for volunteers to serve as Program Co-Chairs.

NAFIWC 2027 – Bud Mayfield said due to uncertainty in potential attendance numbers this year and next, no formal planning for NAFIWC 2027 had begun. Portland, Maine and Asheville, North Carolina were offered as possible locations.

New Business

Nominations – SFHWC needs a new Counselor for a three-year term to replace Jacob Betzen. Similar to last year, members will use online voting (by scanning a QR code on their phones) at the closing business meeting. Contact Kamal Gandhi if you wish to submit a nomination.

Chair Gandhi thanked this year's Local Arrangements Chair, Dieter Rudolph, and Program Co-Chairs, Zach Bragg, Tyler Dreaden, Carrie Fearer, and Dana Nelson, for their diligent work in organizing a great meeting and agenda.

There being no further business, the meeting adjourned at 2:03 PM.

Minutes of the SFHWC Closing Business Meeting
Thursday, July 17, 2025

Hyatt Regency Tulsa Downtown
Tulsa, Oklahoma

Chair Gandhi called the meeting to order at 5:08 PM.

She thanked all of the organizers, presenters, and students.

Old Business

Frustrana Cup – Abby Ratcliff announced that Demian Gomez and Shane Allan won this year's cornhole tournament on Wednesday afternoon.

SFHWC Food Drive – Chair Gandhi thanked everyone for their donations to the Regional Food Bank of Oklahoma and said that attendees could still give up until the end of the Awards Banquet.

Election of Counselor – Carrie Fearer and Ignazio Graziosi were nominated as candidates for SFHWC Counselor, 2025-2029. An online vote was conducted, and Ignazio was elected.

Chair Gandhi reminded everyone that SFHWC Chair-Elect Brian Sullivan will transition to the role of SFHWC Chair after the conclusion of the 2025 meeting. She thanked Immediate Past Chair Lynne Rieske-Kinney, who will be rotating off the SFHWC Executive Committee. The new Immediate Past Chair will be Kamal Gandhi, and she will serve in that role until Brian replaces her in 2028.

SFHWC 2026 – Simone Lim-Hing, Kristy McAndrew, and Elizabeth McCarty volunteered to be Program Co-Chairs.

NAFIWC 2027 – A meeting is possible for 2027, but more planning needs to be done.

SFHWC 2027/2028 – Very early suggestions for a SFHWC location in 2027 (if no NAFIWC) or 2028 included Asheville, North Carolina, New Orleans, Louisiana, and Austin, Texas.

Bud Mayfield again requested volunteers to produce additional Hopkins frames to be presented to future SFHWC Hopkins Award recipients. Colton Meinecke offered to ask his friend who does woodworking.

New Business

None.

There being no further business, Chair Gandhi adjourned the meeting at 5:28 PM.

Minutes of the Awards Banquet
Thursday, July 17, 2025

Hyatt Regency Tulsa Downtown
Tulsa, Oklahoma

Chair Kamal Gandhi called the awards ceremony to order at 8:06 PM.

Photo Salon – Abby Ratcliff stated that 125 photos and 5 videos were submitted this year from 20 members, whom she thanked along with judges: Brittany Barnes, Rhys Eshleman, Paul Merten, and Caterina Villari. She announced the 1st Place winners in each category, as well as the Best in Show winner, **Ignazio Graziosi** (see attached). Ignazio received $50, and his picture will be featured on the cover of the SFHWC 2026 program. Pictures will be forwarded to the Bugwood website.

Chair Gandhi and Secretary-Treasurer Shepherd reminded everyone to donate to this year's Food Drive. [The final donation amount was $225.]

Graduate Student Presentation Awards – Katy Moretti and Zach Bragg, standing in for Graduate Student Session Coordinator, Ashley Schulz, thanked the students and four judges: Carrie Fearer, Ignazio Graziosi, Kristy McAndrew, and Lynne Rieske-Kinney. They presented the Fred Stephen Award for Outstanding M.S. Presentation and $200 to **Pamela Zader**, a student of Kelly Oten at NC State University; and the Fred Stephen Award for Outstanding Ph.D. Presentation and $300 to **Harrison Miles**, a student of Carrie Fearer at Virginia Tech. Katy and Zach said the competition was very close and that rubrics were now available for students to pick up.

Roger F. Anderson Award – Lynne Rieske-Kinney, Chair, thanked committee members, Natalie Clay, Bob Coulson, Tyler Dreaden, and Kier Klepzig. She announced there were four very qualified candidates and that **Colton Meinecke**, a Ph.D. student of Caterina Villari at University of Georgia, received the 2025 award. Colton was presented with a certificate and $500 check; his personalized award plaque will be mailed to him in a few weeks.

A.D. Hopkins Award – Bud Mayfield, Chair, presented 2024 recipient, Kamal Gandhi, with a personalized award plaque. He thanked committee members, Chandler Barton, Alexandra Blevins, Katie McKeever, Scott Salom, Brian Sullivan, and Caterina Villari. Bud reported that this year's winner is **Jerome Grant**, University of Tennessee. Jerome (not present) will be given an A.D. Hopkins framed picture and letter. A personalized award plaque will be presented to Jerome at the 2026 SFHWC.

Chair Gandhi thanked those who helped organize the 2025 SFHWC, asked everyone to consider attending next year's meeting on Jekyll Island, and adjourned the awards ceremony at 8:22 PM.

Respectfully submitted,

William P. Shepherd, Secretary-Treasurer

SFHWC Financial Report, CY 2025

SFHWC Income & Expenditures

January 1, 2025 – December 31, 2025

Balance on hand, 1/1/25	$17,058.49
Income	
Registrations, Donations, and Banquet fees	$30,302.95
Available Funds	$47,361.44
Expenses	
2025 Meeting	$26,961.49
Awards & Administration	$1,421.62
2026 Hotel Deposit	$1,000.00
Total Expenses	$29,383.11
Balance on hand, 12/31/25	$17,978.33

Historian's Report
64th SFHWC
Tulsa, Oklahoma

Good afternoon, folks. It is great to see everyone here for another SFHWC. It is my pleasure to deliver the 2025 Southern Forest Health Work Conference Historian's Report in Tulsa, Oklahoma. As part of this report, I'd like to acknowledge the efforts of the previous SFHWC Historian, Paul Merten, whom has served in this role since 2018. Please thank Paul for his years of service to SFHWC.

Secondly, I'd like to thank Will Shepherd and the members of the Executive Committee for entrusting me with this position moving forward. I appreciate your confidence in my abilities and discretion. I'd also like to thank Colton Meineke. Colton has already contributed time and insight across multiple conversations as a member of the History committee, where we have further discussed this role and its contributions to SFHWC. I appreciate that.

Today is a historic occasion. In spite of nearly seventy years of work conferences, this is our first meeting in our northwesternmost member state of SFHWC, Oklahoma. This historic meeting is largely in part due to the efforts of our local arrangements chair, Dieter Rudolph. As many of you know, there is a significant amount of work to coordinating a meeting on the ground. Please thank Dieter.

Traditionally, these reports have, in part, highlighted changes in the scientific content of the program, as it relates to the last time the meeting was held. Sometimes, contextualizing differences between meetings as correlating with broader social and political changes in society.

Because this is our first meeting in Oklahoma, and I thus have no past meetings to compare our current with, I wanted to address the present and contextualize it with the importance of the scientific record.

This meeting coincides with historic and sweeping changes in our government, and our other institutions. These changes are impacting our personal and professional lives greatly. I want to acknowledge that and say I stand in solidarity with all of you.

I don't want to conflate these events, but we are living through an era of unprecedented censorship. We are watching the history of climate and earth science be rewritten. The accuracy of these records is critical to our understanding of global ecosystem health.

This compels us to be the keepers of our own records and stewards of our own stories and truths. As scientists, we must not let our findings be minimized or misrepresented. This is especially dire in an era of rapid global change, that threatens to dramatically alter terrestrial and aquatic ecosystems, and the world as we know it. We must fight against shifting baseline syndrome. We must be proactive.

Now, to get off of my soap box, I will say that in my *limited role* as the new Historian of the SFHWC, I will work with integrity to collect, archive, maintain, and protect the records of our efforts, scientific and otherwise.

Further, I will work to synthesize and contextualize these records in a fashion that is consistent with our collectively agreed upon goals of the Southern Forest Health Work Conference, to 1) advance the science and practice of forest health, 2) provide a medium of exchange of professional thought, and 3) serve as a clearing house for technical information on forest health problems of the southern United States.

Thank you for listening.

Todd D. Johnson, PhD.
Assistant Professor of Forest Entomology
Louisiana State University
Southern Forest Health Work Conference Historian

Prepared July 14, 2025

Photo Salon Awards
2025 SFHWC – Tulsa, Oklahoma
Brittany Barnes & Abby Ratcliff, Organizers

Forest Insect
1st Place Ridley Graugnard – Jolly cooperation – carpenter ants caring for aphids

Forest Pathogen
1st Place Ridley Graugnard – Leaf it alone

Forest Pathogen/Insect Damage
1st Place Drew Metzler – Emerald ash borer emerging in Jackson Co., Alabama

Series
1st Place Ignazio Graziosi – Gall of cedar-apple rust *Gymnosporangium juniperi-virginiane*

Other
1st Place Paul Merten – Aftermath of Hurricane Helene

Forest Health Specialists at Work
1st Place Bud Mayfield – Bud Mayfield finds a good spot to record data on the Jefferson National Forest, Virginia

Video
1st Place Caterina Villari – Morning stretches

Humor
1st Place Brittany Barnes (and Tom Sheehan) – Entomologists at work

Best in Show Ignazio Graziosi – Gall of cedar-apple rust *Gymnosporangium juniperi-virginiane*

Judges: Brittany Barnes, Rhys Eshleman, Paul Merten, Abby Ratcliff, and Caterina Villari

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64th Conference, July 15-17, 2025
Tulsa, Oklahoma

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65th Conference, August 4-6, 2026
Jekyll Island, Georgia

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