The 65th Annual
Southern Forest Health Work Conference

Forest Health: Rooted in Collaboration

August 4-6, 2026 | Jekyll Island, Georgia

Artwork by Gabriel Tigreros

Special thank you to the following individuals who made SFHWC 2026 possible:

SFHWC Chair: Brian Sullivan

Secretary-Treasurer: Will Shepherd

Local Arrangements: Brittany Barnes, Kamal Gandhi, Kier Klepzig, Thomas Sheehan, and Caterina Villari

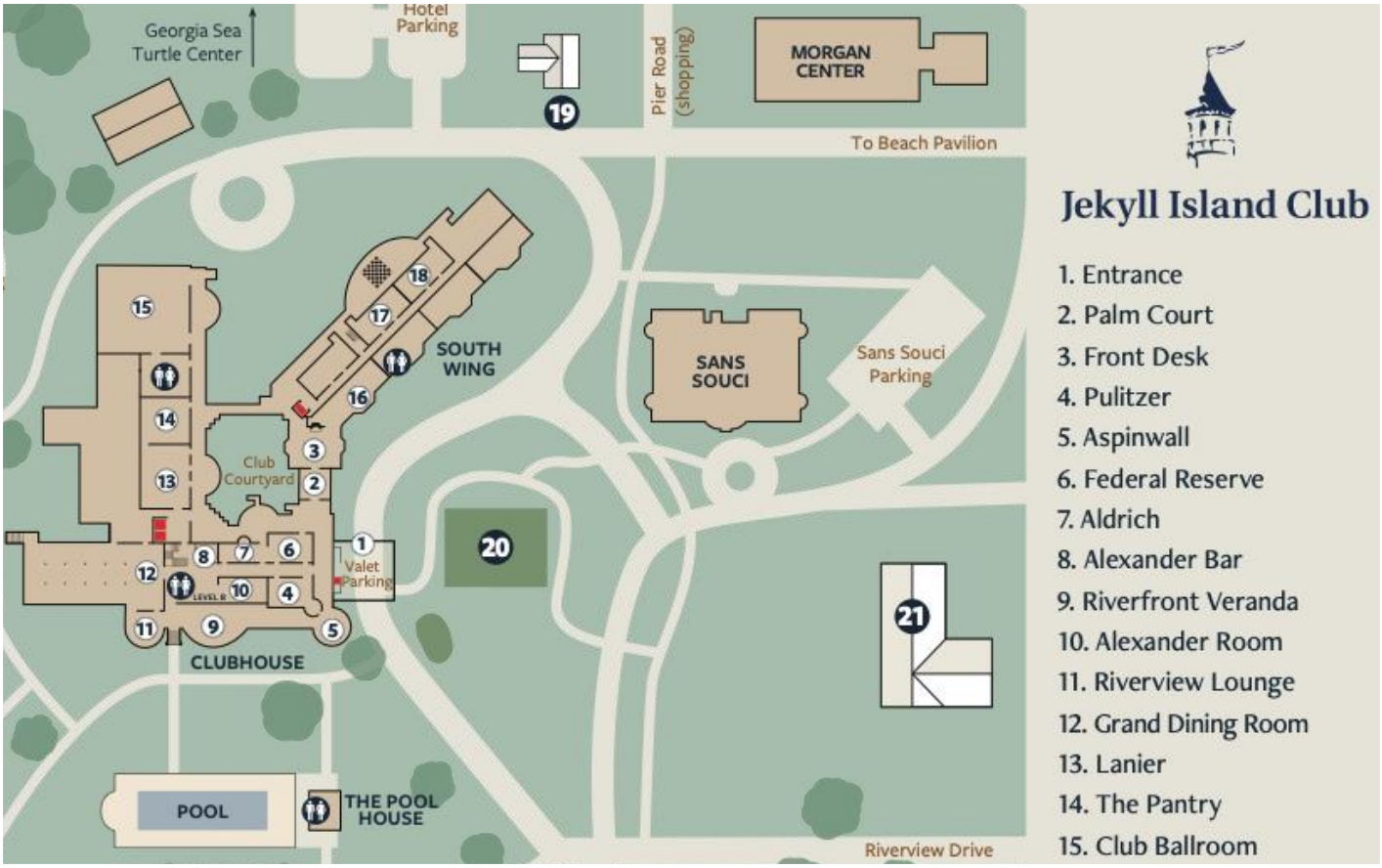
Program Co-chairs: Simone Lim-Hing, Kristy McAndrew, and Elizabeth McCarty

65th SFHWC Program Summary

Time	Session Title	Location
Tuesday, August 4		
8:30 AM - 12:00 PM	Meeting Registration	Club Ballroom
9:00 AM - 10:00 AM	A.D. Hopkins Award Meeting	Federal Reserve
10:00 AM - 11:00 AM	Roger F. Anderson Award Meeting	Federal Reserve
10:00 AM - 12:00 PM	State Cooperators Meeting	Club Ballroom
11:00 AM - 12:00 PM	Executive Committee Meeting	Federal Reserve
12:00 PM - 1:00 PM	Lunch on your own	
12:00 PM - 5:00 PM	Meeting Registration	Morgan Center
1:00 PM - 8:00 PM	Poster Set-up	Morgan Center
1:00 PM - 1:15 PM	Welcome Address	Morgan Center
1:15 PM - 2:00 PM	Open Business Meeting	Morgan Center
2:00 PM - 2:30 PM	Keynote Address	Morgan Center
2:30 PM - 3:00 PM	Plenary Session I	Morgan Center
3:00 PM - 3:45 PM	Break/Group Photos	
3:45 PM – 4:15 PM	Plenary Session II	Morgan Center
4:15 PM - 5:00 PM	A.D. Hopkins Presentation	Morgan Center
6:00 PM - 8:00 PM	Mixer and Reception	Pulitzer/Aspinwall
8:00 PM - 10:00 PM	Insect Light Sheeting	Beach
Wednesday, August 5		
8:00 AM - 12:00 PM	Meeting Registration	Morgan Center
8:00 AM - 10:00 AM	Ph.D. Graduate Student Session	Morgan Center
10:00 AM - 10:30 AM	Break	
10:30 AM - 12:00 PM	M.S. Graduate Student Session	Morgan Center
12:00 PM - 1:00 PM	Lunch on your own	
1:00 PM - 3:00 PM	Field Trip	
3:00 PM - 5:30 PM	Frustrana Cup	Beach
6:00 PM - 8:00 PM	Poster Session and Reception	Morgan Center

Time	Session Title	Location
	Thursday, August 6	
8:30 AM - 10:00 AM	**Concurrent Session I**	
	A. Loblolly pine pests and pathogens	**Ballroom A**
	B. Open session	**Lanier**
	C. Urban forest health	**Ballroom B**
10:00 AM - 10:30 AM	**Break**	**Veranda**
10:30 AM - 12:00 PM	**Concurrent Session II**	
	A. Assessing the impact of the reorganization of the USDA Forest Service on the forest health enterprise	**Ballroom A**
	B. Restoration of hemlock stands from science to community involvement	**Lanier**
	C. Research collaboration on needle blight management	**Ballroom B**
12:00 PM - 1:30 PM	**Lunch on your own**	
1:30 PM - 3:00 PM	**Concurrent Session III**	
	A. White pine dieback: An emerging forest health concern in the southeastern U.S.	**Ballroom A**
	B. The story behind the science	**Lanier**
	C. Forest viruses: The good, the bad, and the ugly	**Ballroom B**
3:00 PM - 3:30 PM	**Break**	**Veranda**
3:30 PM - 5:00 PM	**Concurrent Session IV**	
	A. From Ailanthus to Xanthium: Impacts and solutions for invasive plants in forest ecosystems	**Ballroom A**
	B. Bees in trees: Forest pollinators from root to canopy	**Lanier**
	C. Turning forest pests and pathogens against themselves with RNAi	**Ballroom B**
5:00 PM - 6:00 PM	**Closing Business Meeting**	**Club Ballroom**
7:00 PM - 9:00 PM	**Awards Banquet** Photo Salon Graduate Student Presentation Awards Roger F. Anderson Award A.D. Hopkins Award	**Morgan Center**

The Jekyll Island Club Resort
Jekyll Island, Georgia



65th Annual Southern Forest Health Work Conference Program

4-6 August 2026 | Jekyll Island, Georgia

Tuesday, August 4		Location
8:30 AM - 12:00 PM	**Meeting Registration** Organizer: Will Shepherd (USDA Forest Service-SRS)	**Club Ballroom**
9:00 AM - 10:00 AM	**A.D. Hopkins Award Meeting** Organizer: Kamal Gandhi (University of Georgia)	**Federal Reserve**
10:00 AM - 11:00 AM	**Roger F. Anderson Award Committee Meeting** Organizer: Caterina Villari (University of Georgia)	**Federal Reserve**
10:00 AM – 12:00 PM	**State Cooperators Meeting** Organizers: Lori Chamberlin (Virginia Forest Service), David Coyle, and Katy Crout Moretti (Clemson University) Moderator: Katy Crout Moretti (Clemson University)	**Club Ballroom**

- ***Mississippi forest health programs and projects***
  Garron Hicks (Mississippi Forestry Commission)
- ***Beech leaf disease: An emerging threat in Virginia***
  Lori Chamberlin and Meredith Bean (Virginia Department of Forestry)
- ***Invasive plants in the Southeast – The difficulties of a limited definition***
  Katie Biggert (South Carolina Forestry Commission)
- **Cogongrass eradication in Georgia: Wins and head winds**
  Paul McDaniel and Mark McClure (Georgia Forestry Commission)

11:00 AM – 12:00 PM	**Executive Committee Meeting**	**Federal Reserve**
12:00 AM – 1:00 PM	**Lunch on your own**	
12:00 AM – 5:00 PM	**Meeting Registration** Organizer: Will Shepherd (USDA Forest Service-SRS)	**Morgan Center**
12:00 AM – 8:00 PM	**Poster Set-up** Organizer: Forest Palmer (Clemson University)	**Morgan Center**
1:00 PM – 1:15 PM	**Welcome Address** *A snapshot of Georgia's forests and forestry challenges* Troy Clymer (Georgia Forestry Commission)	**Morgan Center**

1:15 PM – 1:45 PM	**Open Business Meeting** Brian Sullivan (USDA Forest Service-SRS)	**Morgan Center**
1:45 PM - 2:00 PM	**State Cooperators Update** Lori Chamberlin (Virginia Department of Forestry)	**Morgan Center**
2:00 PM – 2:30 PM	**Keynote Address** *The past, present, and future of Georgia's maritime forests: Learning from collaborations and communities* Elizabeth G. King (University of Georgia)	**Morgan Center**
2:30 PM – 3:00 PM	**Plenary Session I** *A landowner's view of forest health* Heather Brasell (Gaskins Forest Education Center)	**Morgan Center**
3:00 PM – 3:45 PM	**Break and group photos**	
3:45 PM – 4:15 PM	**Plenary Session II** *The times they are a changin'– A somewhat anecdotal account of a Cinderella story* Bob Coulson (Texas A&M University)	**Morgan Center**
4:15 PM – 5:00 PM	**A.D. Hopkins Address** *Ticks and spiders and bugs, oh my!: Perspectives on 43 years down the entomological yellow brick road* Jerome Grant (University of Tennessee)	**Morgan Center**
6:00 PM – 8:00 PM	**Mixer and Reception**	**Pulitzer/Aspinwall**
8:00 PM – 10:00 PM	**Insect Light Sheeting** Organizer: Gabriel Tigreros (The Jones Center at Ichauway)	**Beach**

Wednesday, August 5

Breakfast on your own

8:00 AM – 12:00 PM **Meeting Registration** **Morgan Center**
Organizer: Will Shepherd (USDA Forest Service-SRS)

8:00 AM – 10:00 AM **Ph.D. Graduate Student Session** **Morgan Center**
Organizers: Ashley Schulz (Mississippi State University), William Thayer (University of Georgia), and Delaney Serpan (North Carolina State University)
Moderator: Will Thayer (University of Georgia)

8:00-8:04 **Welcome to the first half of the graduate student session**

8:04-8:16 **Exploring management options for a novel pest: Efficacy of multiple insecticides against elm zigzag sawfly**
Speaker: Delaney Serpan

8:17-8:29 **Canopies and calipers: Advancing Asian longhorned beetle detection using remote sensing of hosts and science-based outreach**
Speaker: Courtney Johnson

8:30-8:42 **Host-symbiont metatranscriptome of the *Xylosandrus crassiusculus* (Coleoptera: Curculionidae: Scolytinae: Xyleborini) mycangium reveals complex interactions underlying fungal transport**
Speaker: Miranda Barnes

8:43-8:55 **Mapping cogongrass genetic variation in the southeastern U.S. using microsatellites**
Speaker: Elizabeth Esser

8:56 - 9:08 **Analyzing the impact of brown spot needle blight (*Lecanosticta acicola*) on loblolly pine (*Pinus taeda*) growth**
Speaker: J. Christopher Jacobson

9:09 - 9:21 **The interaction effects of spotted lanternfly and the *Ailanthus altissima* biocontrol, *Verticillium nonalfalfae***
Speaker: Harrison Miles

9:22 - 9:34 **Ant community shifts after wind damage from a catastrophic tornado in planted pines in North Carolina**
Speaker: Ourania Nikolaidis

9:35 - 9:47 **An optimized artificial pathogenicity assay for brown spot needle blight on radiata pine: Insights from the *Dothistroma-radiata* pathosystem**
Speaker: Rowan Christopher

9:48 - 10:00 **Riparian responses to salinization: Linking plant diversity, phytochemistry, and organic matter inputs**
Speaker: Maggie Herrmann

10:00 **Close of first session**

10:00 AM – 10:30 AM Break

10:30 AM – 12:00 PM M.S. Graduate Student Session **Morgan Center**
Organizers: Ashley Schulz (Mississippi State University), William Thayer (University of Georgia), and Delaney Serpan (North Carolina State University)
Moderator: Delaney Serpan (North Carolina State University)

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

10:32 - 10:44 **Assessing Acelepryn: A systemic insecticide for Nantucket pine tip moth**
Speaker: William Thayer

10:44 - 10:56 **Blight and beetles: Indirect impacts of brown spot needle blight on loblolly pine health**
Speaker: Daniel Kimball

10:56 - 11:08 **Forest and tree-level carbon responses to beech leaf disease**
Speaker: Caitlin Littlejohn

11:08 - 11:20 **Conservation consequences in the southern Appalachians: Does protecting hemlocks help or harm larval stream salamanders?**
Speaker: Cassandra Waldrop

11:20 - 11:32 **Forest heterogeneity as a driver of arthropod biodiversity patterns in Northeast Mississippi**
Speaker: Madeline Grantham

11:32 - 11:44 **Identifying Fraser fir resistant to balsam woolly adelgid using near-infrared spectroscopy, machine learning, and proteomics**
Speaker: William Parrott

12:00 **Close of second session**

12:00 PM– 1:00 PM Lunch on your own

1:00 PM – 3:00 PM	**Field Trip - Coastal Tree Tour** Organizer: Paul McDaniel (Georgia Forestry Commission)	
3:00 PM – 5:30 PM	**Frustrana Cup** Organizer: Brittany Barnes (University of Georgia)	**Beach**
6:00 PM – 8:00 PM	**Poster Session** Organizer: Forest Palmer (Clemson University)	**Morgan Center**

Thursday, August 6

Breakfast on your own

8:30 AM – 10:00 Concurrent Session 1

Loblolly pine pests and pathogens **Ballroom A**

Organizer and moderator: Laura Sims (University of Arkansas Monticello)

- ***Developing a guide on damage agents of needles and branches of loblolly pine in Arkansas, Louisiana and Texas***

  Gage Amos, Lucas Babst[1], David Blythe, Chandler Barton[2], and Laura Sims[1]

  [1]University of Arkansas Monticello; [2]Arkansas Dept. Agriculture Division of Forestry

- ***Nantucket pine tip moth – An eastern invader being a real pest in Arizona***

  Elizabeth McCarty[1], Amanda Grady[2], Dena Forrer[2], and Jack Hood[2]

  [1]University of Georgia; [2]USDA Forest Service

- ***Potential new tools for managing Texas town ants affecting loblolly plantations in Louisiana and Texas and next steps for further development***

  Caroline Thoreson[1] and Laura Sims[2]

  [1]Stephen F. Austin University; [2]University of Arkansas Monticello

- ***Evaluating fire as a tool for managing brown spot needle blight in mature pine in southeast Arkansas***

  Dalton Weatherly, Michael Blazier, and Laura Sims

  University of Arkansas Monticello

- ***A histological glance inside the young needles of loblolly pine affected by brown spot needle blight***

  Laura Sims

  University of Arkansas Monticello

Open Session **Lanier**

Moderators: Katy Crout Moretti and Forest Palmer (Clemson University)

- ***Evaluation of semiochemicals for management of southwestern pine beetle in West Texas***

  Demian F. Gomez[1], Jackson Audley[2], Leif A. Mortenson[3], Christopher Fettig[3], and Agenor Mafra-Netod[4]

  [1]Texas A&M Forest Service; [2]University of California-Davis; [3]USDA Forest Service-PSRS; [4]ISCA

- ***The effect of prescribed burning on laurel wilt vectors in a post-outbreak forest***
  Shane M. Allan, Scott M. Salom, T. Adam Coates, and Carrie J. Fearer
  Virginia Polytechnic Institute and State University

- ***Salinization impacts on riparian forest and stream decomposition and productivity***
  Natalie A. Clay[1], Maggie Herrmann[1], Sally A. Entrekin[2], Samuel Dias[1], Connor Foley[1], Beck O'Neill[1], and Michelle A. Evans-White[1]
  [1]University of Arkansas; [2] Virginia Polytechnic Institute and State University

- ***Odors associated with depleted host trees as bark beetle semiochemicals***
  Brian T. Sullivan and William P. Shepherd
  USDA Forest Service-SRS

- ***A genomic reappraisal of native* Fusarium circinatum *populations in North America***
  Colton D. Meinecke[1], Owen H. Hudson[2], Adia C. McGahee[1], Helen Bothwell[1], Michael J. Wingfield[3], Caterina Villari[1], and Jeremy T. Brawner[4]
  [1] University of Georgia; [2]EPL Bio Analytical Sciences; [3]University of Pretoria; [4]University of Florida

- ***Skill assessment of a CONUS-scale Southern Pine Mortality Forecast: A USFS SRS – Rho Earth cooperative agreement project***
  Bradley Wallet[1], James Vogt[2], KaDonna Randolph[2], and Andrew Oishi[2]
  [1]Rho Earth LC; [2]USDA Forest Service-SRS

Urban Forest Health **Ballroom B**
Organizer and moderator: Ignazio Graziosi (University of Georgia)

- ***It takes a village: Collaboration drives urban tree pest management solutions***
  Kelly Oten
  North Carolina State University

- ***Building and applying collaborative research to advance urban tree health***
  Kendra Wagner
  Rainbow Ecoscience

- ***Saving our ash – one tree and landowner at a time***
  Brittany Barnes
  University of Georgia

- ***Scaling up collaboration: Partnerships in CMBS research and management****
  Samantha Kennett
  Clemson University
  **virtual presentation*

10:00 AM – 10:30 AM Break

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

Assessing the impact of the reorganization of the USDA Forest Service on the forest health enterprise **Ballroom A**

Organizers and moderators: Kier Klepzig (The Jones Center at Ichauway) and Bob Coulson (Texas A&M University)

Bob and Kier will lead a discussion with the basic outline as follows:

- Context: The history of federal investment in forest health and research
- What has been lost already
- FS reorganization and OMB directives
- Potential gaps, opportunities, and imperatives
- Brainstorming: Critical need to focus on critical issues
- The way forward

Restoration of Hemlock Stands from Science to Community Involvement **Lanier**

Organizer and moderator: Scott Salom (Virginia Polytechnic Institute and State University)

- ***Establishment, recovery, and redistribution of HWA predator,* Laricobius osakensis*, in Virginia and beyond***

  Carrie Jubb, Ary James, Mary Hoffman, Olivia Andrews, and Scott Salom

  Virginia Polytechnic Institute and State University

- ***"You leave me alone and I'll leave you alone:" What silver fly and beetle predators of HWA say to each other***

  Mary Hoffman, Olivia Andrews, and Scott Salom

  Virginia Polytechnic Institute and State University

- ***Surveying eastern silver flies on HWA and PBA across a geographic gradient***

  Aryanna James[1], Carrie Jubb[1], Scott Salom[1], Albert (Bud) Mayfield III[2], Nathan Havill[2], Olivia Andrews[1], Mary Hoffman[1], Dylan Steberg[1], Nicholas Dietschler[3], Mark Whitmore[3], Ryan Crandall[4], Sarah Travalio[5], Nicholas Marcet[5], Tatiana Dorn[5], Danielle Kelley[2], James Altemus[6], Patrick Simons[7], Chelsea Dowell[7], Timothy Tomon[2], Douglas Roberts[8], Sam Herold[8], Ryan Thorn[8], and Kristen Carrington[8]

  [1] Virginia Polytechnic Institute and State University; [2]USDA Forest Service-SRS; [3]Cornell University; [4]New Hampshire Department of Natural & Cultural Resources; [5]New York State Parks; [6]Pennsylvania Department of Conservation & Natural Resources, [7]Maryland Department of Agriculture; [8]West Virginia Department of Agriculture

- ***Restoring hemlock in adelgid-impacted forests: Insights from experimental planting strategies***

  Lauren Gonzalez [1], Albert (Bud) Mayfield III[2], and Robert Jetton[3]

  [1]University of Maine; [2]USDA Forest Service-SRS; [3]North Carolina State University

- ***Two for one: Canopy gaps that improve the health of adelgid-infested eastern hemlock also favor bee diversity and abundance***

  Albert (Bud) Mayfield III[1], Robert M. Jetton[2], Michael D. Ulyshen[1], Scott Horn[1], and Bryan T. Mudder[1]

  [1]USDA Forest Service-SRS; [2] North Carolina State University

- ***Hemlock restoration rooted in community engagement results in healthier canopies with greater reach and broader impacts***

  Margot Wallston and Olivia Hall

  North Carolina Hemlock Restoration Initiative

Research collaboration on needle blight management **Ballroom B**

Organizers and moderators: Caterina Villari (University of Georgia) and Rabiu Olatinwo (USDA Forest Service-SRS)

- ***Research collaboration to facilitate management of pine needle blight in the southeastern USA***

  Rabiu O. Olatinwo, Jaesoon Hwang, Kristi Wharton, and Wood Johnson

  USDA Forest Service-SRS

- ***Damage assessment and mitigation strategies against brown spot needle blight outbreaks in planted loblolly pine***

  Caterina Villari[1], Zach Bragg[1], Rhys Eshleman[1], Stephen Kinane[1], Julia Luy[1], Elizabeth McCarty[1], Kathleen McKeever[2], Adia McGahee[1], and Colton Meinecke[1]

  [1]University of Georgia; [2]USDA Forest Service

- ***Genomic comparison of* Lecanosticta acicola *isolates provides clues to the cause of the loblolly pine outbreak and origins of southern USA, northern USA and European populations***

  Harshita Saxena[2], Tyler Dreaden[1], Cady Greenslit[1], Rebekah Ellsworth[2], Caterina Villari[3], Irene Barnes[4], and Mark Farman[2]

  [1]USDA Forest Service-SRS; [2]University of Kentucky; [3]University of Georgia; [4]University of Pretoria

- ***Associations between soil microbial communities and brown spot needle blight disease severity in loblolly pine plantations***

  Carolyn R. Cornell[1], Rabiu O. Olatinwo[2], Kristi Wharton[2], and Jane E. Stewart[1]

  [1]Department of Agricultural Biology, Colorado State University; [2]USDA Forest Service-SRS

- ***See spot run…brown spot that is: Understanding brown spot needle blight disease epidemiology on loblolly pine in the southern United States***

  Jason A. Smith[1], Hannah Mitchell[1], John Thomason[2], Kristy McAndrew[2], John Riggins[3], Tim Martin[4], Kathy Smith[4], Tania Quesada[4], and Nicolas Anger[4]

  [1]University of Mount Union; [2]Mississippi State University; [3]Oregon State University; [4]University of Florida

- ***Gene content of an endophytic lifestyle: Comparative genomics of fungi isolated from BSNB-affected pine needles.***

  Gabriel A. A. Silva, Temitope R. Folorunso, Lori G. Eckhart, and Janna R. Willoughby

  Auburn University

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

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

White pine dieback: An emerging forest health concern in the Southeastern United States **Ballroom A**

Organizer and moderator: Hannah Petronek (University of Georgia)

- ***An assessment of eastern white pine populations using national inventory data***

  Simone Lim-Hing[1], Michelle Pretorious[1], Frank Koch[2], Karun Pandit[1], Kevin Potter[2], Qingfeng Guo[2]

  [1]North Carolina State University; [2]USDA Forest Service-SRS

- ***Eastern white pine dieback in the Southern Appalachians: Long-term monitoring and silvicultural interventions***

  Kyle Cavender[1], Robert Jetton[1], Caterina Villari[2], Kamal Gandhi[2], and Albert (Bud) Mayfield III[3]

  [1]North Carolina State University; [2] University of Georgia; [3]USDA Forest Service-SRS

- ***White pine dieback: Livin' on the edge***

  Brian Heath[1], Brittany Barnes[2], Elizabeth McCarty[2], Kamal Gandhi[2], Kendra Wagner[3], Patrick Anderson[3], Tony Goad[3], Andrew Allen[3], Jacob Betzen[4], Katie McKeever[4], Brandon Keener[1], Hunter Cook[1], and Troy Behrens[1]

  [1]North Carolina Forest Service; [2]University of Georgia; [3]Rainbow Ecoscience; [4]USDA Forest Service-SRS

- ***Fungal communities associated with* Matsucoccus macrocicatrices *and feeding wounds on* Pinus strobus**

  Hannah M. Petronek[1], Brittany Barnes[1], Kyle Cavender[2], Brian Heath[3], Albert (Bud) Mayfield III[4], Colton Meinecke[1], Caterina Villari[1], and Kamal Gandhi[1]

  [1]University of Georgia; [2]North Carolina State University; [3]North Carolina Forest Service; [4]USDA Forest Service-SRS

The story behind the science **Lanier**

Organizers and moderators: Hanusia Higgins (University of Georgia) and Temitope Ruth Folorunso (Auburn University)

- ***14 rolls of duct tape, 40 tubes of caulk: What does it really take to dry out a pine tree?***

  Hanusia Higgins

  University of Georgia

- ***To bee or not to bee: Stories of mis-beehaving invertebrates***

  Christine Cairns Fortuin

  Mississippi State University

- ***Maggots gone wild!***

  Brittany Barnes

  University of Georgia

- ***Bacterial leaf scorch: Beyond the ideal system***

  Joy Miracle

  University of Kentucky

- ***Unanticipated results often lead to a nonlinear approach to solving forest pest problems***

  Scott Salom

  Virginia Polytechnic Institute and State University

Forest viruses: The good, the bad, and the ugly **Ballroom B**

Organizer and moderator: Carrie Fearer (Virginia Polytechnic Institute and State University)

- ***A disease never forgotten: Removal of super donor treated American chestnuts****
  Danielle Mikolajewski
  University of Florida
  **virtual presentation*

- ***Exploring* Cryphonectria parasitica *hypoviruses in Virginia***
  Vincent Varsalona, Jason Holliday, and Carrie Fearer
  Virginia Polytechnic Institute and State University

- ***Detection of a novel virus in the quest to identify the causal agent of sugarberry dieback***
  Colton Meinecke[1], Carrie Fearer[2], Carlisle Bascom[2], Afaq Niyas[3], Enrico Bonello[4], Jason Slot[4], and Caterina Villari[1]
  [1]University of Georgia; [2] Virginia Polytechnic Institute and State University; [3]Emory University; [4] The Ohio State University

- ***The influence of beech leaf disease on the phyllosphere and rhizosphere virome of American beech***
  Carrie Fearer[1], Carlisle Bascom[1], Caterina Villari[2], Jason Slot[3], and Enrico Bonello[3]
  [1]Virginia Polytechnic Institute and State University; [2]University of Georgia; [3]The Ohio State University

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3:00 PM - 3:30 PM Break

3:30 PM – 5:00 PM Concurrent Session IV

From Ailanthus to Xanthium: Impacts and solutions for invasive plants in forest ecosystems **Ballroom A**

Organizers and moderators: Ashley Schulz and Elizabeth Esser (Mississippi State University)

- ***In pursuit of desired conditions on the landscape: Essential ingredients for suppression of Chinese tallow tree***
  James T. Vogt[1], Lauren Pile-Knapp[2], Virginia McDaniel[1], Lidya Chala[3], Eric Baka[4], Chris Doffitt[4], Todd Johnson[5], Mohammad Bataineh[6], and Veronica Manrique[7].
  [1]USDA Forest Service-SRS; [2]USDA Forest Service-NRS; [3]University of California – Riverside; [4]Louisiana Department of Wildlife and Fisheries; [5]Louisiana State University; [6]USDA Forest Service Region 8; [7]Southern University

- ***Herbivory patterns across native and introduced woody plants in the southeastern U.S.***
  Miranda Benson[1], Ian Burke[1], David R. Coyle[2], Joshua J. Granger[1], and Ashley N. Schulz[1]
  [1]Mississippi State University; [2]Clemson University

- ***Cogongrass distribution and potential mechanisms of spread in northeast Mississippi***
  Elizabeth A. Esser[1], C. Raymond Pulver[1], Ryan E. Burke[1], Evan G. Moore[1], Rima D. Lucardi[2], Gary N. Ervin[1], Erika D. Womack[1], and Ashley N. Schulz[1]
  [1]Mississippi State University; [2]USDA Forest Service

- ***Mississippi Cogongrass Control Program***
  Garron Hicks
  Mississippi Forestry Commission

- ***A statewide assessment of forest invaders: Who's taking root in Mississippi?***
  Ashley N. Schulz and Elizabeth A. Esser
  Mississippi State University

- ***Building a comprehensive list of invasive plants for the southeastern United States***
  Katie Biggert
  South Carolina Forestry Commission

Bees in the trees: Forest pollinators from root to canopy **Lanier**

Organizers: Emma Briggs (University of Georgia) and Amaad Blades (Georgia Department of Natural Resources)
Moderator: Amaad Blades (Georgia Department of Natural Resources)

- ***Effects of Rx fire frequency on pollinator and plant biodiversity in Georgia sandhills pine stands***
  Amaad A. Blades[1,2], Anna Yellin[1], Matt J. Elliot[1], and Kamal Gandhi[2]
  [1]Georgia Department of Natural Resources; [2] University of Georgia

- ***Native bee and understory forb community structure in restored montane longleaf pine forests***
  Mary McTeague[1], Matt Weand[2], Hanen Van Rossem[2], and Christine C. Fortuin[1]
  [1]Mississippi State University; [2]Kennesaw State University

- ***Effects of forest characteristics on wild bee populations and communities in montane longleaf pine stands***
  Alexia L. Marconi[1,2], Kier D. Klepzig[2], Christine C. Fortuin[3], Matt Weand[4], Emma L. Briggs[1], and Kamal Gandhi[1]
  [1]University of Georgia; [2]Jones Center at Ichauway; [3]Mississippi State University; [4]Kennesaw State University

- ***Opportunities for cavity-nesting pollinator conservation within streamside management zone***

  Emma L. Briggs[1], Daniel U. Greene[2,3], Angela L. Larsen-Gray[4], Holly L. Munro[4], Roxanne D. Pourshoushtari[1], Steven B. Castleberry[1], and Kamal Gandhi[1]

  [1]University of Georgia; [2]Weyerhaeuser Company; [3]American Bird Conservancy; [4]National Council for Air and Stream Improvement, Inc.

- ***Characterizing bee (Hymenoptera: Apoidea: Anthophila) roadkill across Texas, United States of America***

  Shelby K. Kilpatrick[1], James L. Tracy[1], Karen Wright[2,3], Elise V. Voltura[4], Anna-Capri Perez[5], Jasper Klein[6], Adrienne Brundage[1], and Robert Coulson[1]

  [1] Texas A&M University; [2]Washington State Department of Agriculture; [3]University of New Mexico; [4]Texas A&M University; [5]Tetra Tech; [6]Portland Parks and Recreation

- ***Using AI-powered sampling to inform evidence-based forest management and enhance pollinator conservation***

  Christine C. Fortuin[1], Laura Figueroa[2], Daniel U. Greene[3], Samee Khan[4], Angela L. Larsen-Gray[5], and Khoa Luu[6]

  [1]Mississippi State University; [2]University of Massachusetts Amherst; [3]American Bird Conservancy; [4]Kansas State University; [5]National Council for Air and Stream Improvement; [6]University of Arkansas

Turning forest pests and pathogens against themselves with RNAi **Ballroom B**

Organizers: Dana Nelson and Joshua Konkol (University of Kentucky)
Moderators: Joshua Konkol and Flávia Pampolini (University of Kentucky)

- ***Ten years in - where we're at developing gene silencing as a viable forest pest management option***

  Lynne K. Rieske

  University of Kentucky

- ***Emerald ash borer specific gene silencing demonstrates short-term persistence in soil and minimal effects on collembolans***

  Faith S. Boa and Lynne K. Rieske

  University of Kentucky

- ***From the lab to the field: Delivery strategies for RNAi-based biopesticides in emerald ash borer management***

  Flávia Pampolini and Lynne K. Rieske

  University of Kentucky

- ***Applying RNAi-based gene silencing to control butternut canker disease****
  Mojtaba Zamani Faradonbeh[1], Anna O. Conrad[2], and Douglass Jacobs[1]
  [1]Purdue University; [2]USDA Forest Service
  **Virtual presentation*

- ***Developing strategies for dsRNA uptake by* Harringtonia lauricola *for RNAi-based gene silencing to control laurel wilt disease***
  Joshua L. Konkol[1], Karthi Sengodan[2], Joy Miracle[1], Ellen Crocker[1], and Tyler Dreaden[2]
  [1]University of Kentucky; [2]University of Kentucky; [3]USDA Forest Service-SRS

7:00 – 9:00 Awards Banquet **Morgan Center**

Photo Salon Awards
Organizer: Brittany Barnes (University of Georgia)
Graduate Student Presentation Awards
Organizer: Ashley Schulz (Mississippi State University)
A.D. Hopkins Award
Organizer: Kamal Gandhi (University of Georgia)
Roger F. Anderson Award
Organizer: Caterina Villari (University of Georgia)

2026 SFHWC Poster Session
Wednesday, August 5, 6:00 – 8:00 PM | Morgan Center Mezzanine

Organizer: Forest Palmer (Clemson University)

1. **Impacts of the Invasive Asian longhorned beetle (*Anoplophora glabripennis*) in natural areas of the Southeastern US.**
   Caleb Davis[1], R. Talbot Trotter III[2], Donald Hagan[1], and David R. Coyle[1]
   [1]Clemson University; [2]USDA Forest Service; [3]USDA APHIS

2. **Woodboring beetle responses to a major tornadic event in pine forests**
   Claudia Farnell[1], Chelsea Miller[2], JT Vogt[3], Elizabeth McCarty[1], and Kamal J.K. Gandhi[1]
   [1]University of Georgia; [2]University of Akron; [3]USDA Forest Service-SRS

3. **Effects of Hurricane Helene on forest health in managed pine stands**
   Aubree High[1], Elizabeth McCarty[1], David Clabo[1], Caterina Villari[1], James T. Vogt[2], and Kamal Gandhi[1]
   [1]University of Georgia; [2]USDA Forest Service-SRS

4. **Spotting the lanternfly: Evaluation of lampshade traps for the detection and delimitation of spotted lanternfly populations**
   Abigail Ratcliff[1], Forest Palmer[2], and Kelly Oten[1]
   [1]North Carolina State University; [2]Clemson University

5. **Effects of fire season on pine resin defenses against Ips beetle infestations.**
   Emma Zeitler[1], Kamal Gandhi[1], Kier Klepzig[2], Adia Mcgahee[1], Colton Meinecke[1], Kevin Robertson[3], Brian Sullivan[4], Caterina Villari[1], and Holly Munro[1,5]
   [1]University of Georgia; [2]The Jones Center at Ichauway; [3]Tall Timbers Research Station; [4]USDA Forest Service-SRS; [5]National Council for Air and Stream Improvement, Inc.

6. **Integrated evidence can identify bark and ambrosia beetle threats before they are recognized as major pests**
   Yiyi Dong and Jiri Hulcr
   University of Florida

7. **Understanding the growth response of eastern hemlock and Carolina hemlock within multiple light environments through an analysis of key physiological traits**
   Cameron Carter[1], Robert Jetton[1], Albert Mayfield III[2], Jodi Forrester[1], and Maricar Aguilos[1]
   [1]North Carolina State University; [2]USDA Forest Service-SRS

8. **Enhancing freezing tolerance of southern pines**
   Francis Nimbaje Siibu and Annakay Diana Newell
   Auburn University

9. **Expanding behavioral studies of *Leucotaraxis* spp., specialist predators of hemlock woolly adelgid**

Mary Hoffman[1], Olivia Andrews[1], Mark Whitmore[2], Chin-Cheng Scotty Yang[3], Thomas Kuhar[1], Enakshi Ghosh[1], and Scott Salom[1]

[1]Virginia Polytechnic Institute and State University; [2]Cornell University; [3]Texas A&M University

10. **RNA interference for forest health — An introduction and invitation to participate**

Joy Miracle[1], Joshua Konkol[1], Tyler Dreaden[2], and Ellen Crocker[1]

[1]University of Kentucky; [2]USDA Forest Service-SRS

11. **Assessing loblolly pine (*Pinus taeda* L.) growth response to prescribed fire and herbicide treatments in managed southern pine forests**

J. Christopher Jacobson, Adam D. Polinko, and Ashley N. Schulz

Mississippi State University

12. **Effects of management practices on the severity of active outbreaks of brown spot needle blight affecting loblolly pine**

Adia McGahee, Zach Bragg, Luan Oliveira, Stephen Kinane, Elizabeth McCarty, and Caterina Villari

University of Georgia

13. **Can surfactants increase the effectiveness of gene silencing against EAB?**

Joseph Harris, Flávia Pampolini, and Lynne K. Rieske

University of Kentucky

14. **Spotted lanternfly (*Lycorma delicatula*): A new invasive pest may pose a severe threat to South Carolina's agriculture and forestry industries**

Predeesh Chandran and Caroline O'Dowd Oatley

Clemson University

15. **Odors from fire-injured pines as attractants or repellants for pine-feeding insects**

William Shepherd and Brian Sullivan

USDA Forest Service-SRS

16. **Transcriptomic characterization of fungal community dominance associated with brown spot needle blight symptoms in *Pinus taeda***

Temitope Ruth Folorunso[1], Gabriel A. A. Silva[1], Rabiu O. Olatinwo[2], Lori G. Eckhardt[1], and Janna R. Willoughby[1]

[1]Auburn University; [2]USDA Forest Service-SRS

17. **Salt in the system: How salinization alters decomposition at the riparian-stream interface**

Gisella DePiazza[1], Natalie Clay[2], Lisa Tabor[1], Megan Underwood[1], Amaryllis Adey[1], Michelle Evans-White[3], and Sally Entrekin[1]

[1]Virginia Polytechnic Institute and State University; [2]University of Arkansas; [3]University of Arkansas

18. A Survey of *Lecanosticta acicola* distribution in loblolly pine of Texas

Ian Scadden[1,2], Stephanie Adams[1], and Fred Raley[2]

[1]Texas A&M University; [2]Texas A&M Forest Service

19. Geographically isolated wetlands in longleaf pine as a study system to monitor pollen movement by bees

Lindsey Grimes[1,2], Isaac Park[1], and David Mason[2]

[1]Georgia Southern University; [2]The Jones Center at Ichauway

20. *Polygraphus rufipennis* (Coleoptera: Curculionidae) produces and is attracted to frontalin in Southern Appalachian red spruce stands

Kyle F. Cavender[1,2], Albert E. Mayfield III[3], Bryan T. Mudder[3], and Brian T. Sullivan[3]

[1]North Carolina State University; [2]University of Nebraska-Lincoln; [3]USDA Forest Service-SRS

21. Biomass of predatory stream insects before and after SPLAT® SM-Organic treatment

Christina Navarro, David Speth, Ksenia Onufrieva, Bryan Brown, Andrea Hickman, and Sally Entrekin

Virginia Polytechnic Institute and State University

22. Seven years and counting: Impacts of the Bradford pear bounty program a collaboration between Clemson Extension & the South Carolina Forestry Commission

Jordan B. Bailey[1], David Jenkins[2], Dena Whitesides[2], Katy Moretti[1], Katie Biggert[2], and David R. Coyle[1]

[1]Clemson University; [2]South Carolina Forestry Commission

23. Lingering Hemlock Project: We need your help to restore the mighty hemlock

Olivia Hall and Margot Wallston

Hemlock Restoration Initiative

24. Beyond major resistance genes: Genome-wide characterization of BSNB resistance in loblolly pine

Zachary Bragg, Colton Meinecke, Helen Bothwell, and Caterina Villari

University of Georgia

25. Enhancing American chestnut resistance breeding through integrated genomic and phenomic selection

Colton D Meinecke[1], Zachary Bragg[1], Justin Whitehill[2], Jared Westbrook[3], and Caterina Villari[1]

[1]University of Georgia; [2]North Carolina State University; [3]The American Chestnut Foundation

2026 Graduate Student Session Abstracts

PH.D. STUDENT COMPETITION

Exploring management options for a novel pest: Efficacy of multiple insecticides against elm zigzag sawfly

Delaney Serpan, Steve Frank, and Kelly Oten
North Carolina State University

Elm zigzag sawfly [EZS; *Aproceros leucopoda* (Hymenoptera: Argidae)] is an invasive insect native to eastern Asia. It was first documented in North America in 2020 in Québec, Canada. In 2021, EZS was confirmed in the United States for the first time in Virginia. Elm zigzag sawfly has since been documented in 14 additional states, including North Carolina. As larvae, EZS feeds on the leaves of elm (*Ulmus* spp.) and Japanese Zelkova (*Zelkova serrata*). Defoliation severity ranges from almost undetectable to near complete defoliation, but as a new invader, there are very few studies that offer management solutions and no field trials conducted in North America. To develop management strategies, we conducted a pilot pesticide trial in 2023 and 2024 using imidacloprid and dinotefuran. Both chemicals were effective at reducing the number of EZS larvae on mature *U. americana* in a yard setting. Due to limited site availability, our initial trial included a relatively small number of trees. To expand our understanding of effective chemical control options, we conducted a second pesticide trial, expanding both the number of insecticides evaluated and the study sample size. In April and May of 2026, we evaluated the effectiveness of imidacloprid, acephate, and chlorantraniliprole on potted *U. americana* saplings in a greenhouse setting. Trees were planted in 3 gallon containers. They were treated at label rate via soil drench on April 1, 2026. On April 28, trees were artificially infested with field collected larvae. The number and condition of each larvae were recorded approximately every 24 hours following infestation. These studies are the first to evaluate insecticides in North America, aiming to provide management options as this invasive pest spreads.

Canopies and calipers: Advancing Asian longhorned beetle detection using remote sensing of hosts and science-based outreach

Courtney L. Johnson[1], Abby R. Ratcliff[1], Jean Turgeon[2], Bill Panagakos[3], Chris Jones[1], and Kelly L.F. Oten[1]
[1]North Carolina State University; [2]Great Lakes Forestry Centre, Canadian Forest Service; [3]Forest Pest Methods Lab, USDA-APHIS

The Asian longhorned beetle (ALB), *Anoplophora glabripennis*, is a highly destructive and invasive wood-boring beetle that attacks and kills a wide range of hardwood trees with a strong preference for maple (*Acer* spp.). As the pest feeds and grows, it bores beyond the cambial layer and into the xylem, sometimes reaching the heartwood. Feeding by ALB weakens tree structure and can lead to stem or branch during high wind events, posing risks to people and property in the urban areas where infestations commonly occur. In North America, ALB populations have been detected in Ontario, Canada, several northeastern states, and South Carolina. The South Carolina infestation is a unique environment for ALB relative to the other sites due to the subtropical climate, standing water, and more conifer-dominated forests. These conditions complicate pest detection surveys for field crews by making ALB's preferred host there, red maple (*A. rubrum*), more difficult to locate. To address this, we developed a random forest classifier to identify and map red maple canopies,

achieving an overall accuracy of ~74% using Sentinel-2 data, vegetation indices highlighting autumn coloration, and the tasseled cap transformation. Further, outreach is a critical component of ALB detection, as more than two-thirds of infestations were first reported by a member of the general public. Outreach messaging commonly references the "pencil test" for field identification of ALB damage, stating that ALB's exit hole is about the diameter of a standard number two pencil. When anecdotal evidence suggested that beetles and their exit holes may be larger in South Carolina, we investigated adult beetle and exit hole sizes from various infestations. We measured 349 beetles and 1838 exit holes from infestations in Ontario, New York, Ohio, and South Carolina. Results suggest that not only are adult beetles and their exit holes significantly larger in the South, but 94% of all exit holes measured from any infestation are larger than a standard number two pencil, suggesting a need for updated outreach message for improved field identification. Together, these studies advance ALB detection through host mapping using remote sensing and by improving outreach messaging, supporting ongoing eradication efforts.

Host-symbiont metatranscriptome of the *Xylosandrus crassiusculus* (Coleoptera: Curculionidae: Scolytinae: Xyleborini) mycangium reveals complex interactions underlying fungal transport

Miranda Barnes and Jiri Hulcr
University of Florida

Obligate microbial mutualisms with insects require some means to consistently transmit symbionts from adults to their offspring. In ambrosia beetles, this function is fulfilled by mycangia, which are highly variable in size and morphology across different lineages but all function to move fungal partners between trees and across generations. Despite the important role they play in this relationship, our understanding of these organs remains limited, with many unanswered questions about their function: What might the mycangia "feed" fungi in transit? Do they prevent desiccation? Do they selectively culture some fungi over others? Documenting interactions between beetle tissue and the fungal inoculum will not only contribute to our comprehension of the ambrosia symbiosis but expand our perspectives on mechanisms of animal symbiosis with eukaryotic microbes. In service of this goal, we have sequenced and annotated the genome of *Xylosandrus crassiusculus* and its fungal symbiont *Ambrosiella roeperi* and generated a transcriptome containing reads from both organisms by dissecting, extracting, and sequencing mycangial tissues. In the beetle, we find pathways associated with tissue development upregulated in the mycangium of the beetle relative to a head+pronotum control condition. We also identify several highly expressed genes associated with lipid metabolism and modulation of the immune response. In the fungi, we observed enrichment of pathways for sensing environmental stimuli and dealing with nitrogen and amino acid starvation, highlighting possible cues for fungal phase transition. Although our dataset cannot on its own provide mechanistic evidence for any hypotheses on mycangial function, our results reinforce the idea that beetle-fungus interactions are far from simple and provide potential targets for further molecular experiments (for example, using knockdown and/or knockout approaches).

Mapping cogongrass genetic variation in the southeastern U.S. using microsatellite

Elizabeth A. Esser[1], Paul M. Severns[2], Rima D. Lucardi[3], Gary N. Ervin[1], Erika D. Womack[1], and Ashley N. Schulz[1]
[1]Mississippi State University; [2]University of Georgia; [3]USDA Forest Service-SRS

Cogongrass (*Imperata cylindrica*) is one of the worst invasive plants impacting the southeastern United States, where it threatens native biodiversity and economic productivity by forming dense monocultures, altering fire behavior and regimes, and is a major obstacle to restoration and afforestation efforts. Unlike some invasive plants that have limited genetic diversity in the invaded range, cogongrass has been shown to have high levels of genetic diversity in the invaded range of the southeastern United States. Mapping this genetic variation can allow us to better determine how cogongrass is spreading throughout the region and which lineages are responsible for the majority of the spread. This study uses nine microsatellite markers in 27 populations of cogongrass throughout Mississippi and Alabama to map the spatial distribution of cogongrass's genetic variation in the invaded ranges. Preliminary results show that most populations have an excess of heterozygotes and only one or two genetic lineages present. Some populations have as many as ten genetic lineages present among the fifteen individuals sampled, indicating that the level of genetic diversity varies between populations. Results will also show how populations are related, indicating how different lineages are spreading. Understanding genetic variation distribution may help target and refine control efforts by identifying populations that have higher genetic diversity and therefore higher adaptive capacity, which could increase the likelihood of invasion success or resistance to management. Data showing the direction of spread and which lineages are responsible for the majority of spread will also allow for more targeted management of the most aggressive lineages.

Analyzing the impact of brown spot needle blight (*Lecanosticta acicola*) on loblolly pine (*Pinus taeda*) growth

J. Christopher Jacobson[1], Adam D. Polinko[1], Kristy M. McAndrew[1], John W. Thomason[1], John R. Riggins[2], and Ashley N. Schulz[1]
[1]Mississippi State University; [2]Oregon State University

A variety of southern pine species are susceptible to brown spot needle blight (BSNB), a foliar disease caused by the fungal pathogen *Lecanosticta acicola*. Historically, the disease has been most closely associated with longleaf pine (*Pinus palustris*), particularly during early establishment, but widespread outbreaks in loblolly pine (*Pinus taeda*) have been reported with increasing frequency across the southeastern United States. Since BSNB has only recently emerged as a widespread concern in loblolly pine in production plantations, relatively little is known about its effects on radial growth, vigor, and wood formation. This study evaluated the impact of BSNB infection on loblolly pine radial growth and wood density across four monitoring sites with confirmed disease presence in eastern Mississippi. Each infected site contained 10 permanent monitoring plots. Within each plot, three infected dominant or codominant loblolly pine trees were randomly selected for dendrochronological analysis. Four increment cores, one from each cardinal direction, were extracted from each tree using an increment borer, providing paired material for ring-width measurement and density analysis. Two cores were assigned to standard dendrochronological procedures and were sanded, scanned, and analyzed using CooRecorder and CDendro to measure and crossdate annual ring widths. Ring-width trends were converted to basal area increment to evaluate growth responses on a biologically interpretable stem-area basis. The remaining two cores were scanned using computed tomography to estimate whole-ring, earlywood, and latewood density

using Dragonfly 3D World software. Sentinel-2 imagery was used as supporting information to characterize canopy condition and identify approximate periods of visible symptom expression that could be aligned with dendrochronological infection windows. Annual trends in ring width, basal area increment, and CT-derived wood density were compared across years of detectable infection to determine whether chronic BSNB is associated with reduced growth rates or altered intra-annual wood characteristics. Preliminary results will be presented and discussed. Results from this study will clarify the effects of chronic BSNB infection on loblolly pine growth and wood formation and help inform forest health-focused management in southern pine plantations.

The interaction effects of spotted lanternfly and the *Ailanthus altissima* biocontrol, *Verticillium nonalfalfae*

Harrison Miles, Scott Salom, Jacob Barney, Brian Strahm, and Carrie Fearer
Virginia Polytechnic Institute and State University

Spotted lanternfly (*Lycorma delicatula* Hemiptera: Fulgoridae) is an invasive planthopper which preferentially feeds on the invasive plant, tree-of-heaven (*Ailanthus altissima*). While feeding on tree-of-heaven is not required for spotted lanternfly's survival, its growth and reproduction are enhanced when it has access to tree-of-heaven. All life stages of spotted lanternfly also sequester ailanthone, an allelochemical uniquely produced by tree-of-heaven, which is attributed to the insect's aposematism and chemical defense against predators. This close relationship has made managing tree-of-heaven a priority to reduce the spread of spotted lanternfly. The fungus *Verticillium nonalfalfae*, specifically strain VnAa140, has been proposed as an augmentative biological control agent for tree-of-heaven. Inoculations with VnAa140 are performed by stem injection, and tree mortality may be observed in as little as four months. This study seeks to determine whether spotted lanternfly can vector VnAa140 from infected to naïve tree-of-heaven and whether feeding on infected trees affects spotted lanternfly's survival. In the survival study, 15 spotted lanternfly were caged on inoculated and control-inoculated trees. Surviving and dead spotted lanternfly were counted every two to three days until all insects in the cage had died. In the vector study, 15 spotted lanternfly were caged on inoculated and control-inoculated trees for one week. After one week, five insects were removed for molecular analysis to check for the presence of VnAa140 on or within the insect body. The remaining ten spotted lanternfly were transferred to naïve tree-of-heaven. After one week, these lanternfly were also removed for molecular analysis and the naïve trees were subsequently monitored for symptoms of Verticillium wilt. A PCR on DNA extracted from early instar nymphs failed to amplify the target *V. nonalfalfae* region, suggesting the nymphs did not sequester VnAa140 from feeding on inoculated trees. This result suggests that the presence of spotted lanternfly is unlikely to accelerate the spread of VnAa140 across the landscape.

Ant community shifts after wind damage from a catastrophic tornado in planted pines in North Carolina

Ourania M. Nikolaidis[1], James T. Vogt[2], Brittany Barnes[1], Simone Lim-Hing[3], Holly Munro[1,4], Dan Johnson[1], Bronson Bullock[1], and Kamal J.K. Gandhi[1]
[1]University of Georgia; [2]USDA Forest Service-SRS; [3]North Carolina State University; [4]National Council for Air and Stream Improvement

Ecological disturbances create distinct shifts which can lead to a variety of outcomes for biotic communities and ecosystem function. Ants are particularly useful as a bioindicator taxon within disturbed systems, as they are sensitive to habitat changes, provide important ecosystem functions, and can be sampled repeatedly without depleting their colonies. We studied the assembly of ant communities after a catastrophic windthrow event in the first and third growing season in loblolly pine (*Pinus taeda* L.) stands in North Carolina. A category 3 tornado occurred on 15 February 2021, and caused severe tree damage and mortality along its path. Ants were collected along a damage gradient as follows: 1) tornado track's center (high damage); 2) edge of the track (moderate); and 3) and adjacent unaffected areas (low). Our preliminary results indicated that we collected ~133,000 individuals represented by 20 species in 2021, and ~63,000 individuals with 26 species in 2023. The invasive *Brachyponera chinensis* represented 92% of all ants, with 72% of individuals captured in 2021 alone. Forty percent of *B. chinensis* individuals were collected in areas of high disturbance, while 35% and 26% were found in moderate and low levels of disturbance respectively. The next abundant ant, the native *Monomorium minimum*, accounted for 6% of all ants, 90% of which were captured in 2023. In highly disturbed areas, 60% of *M. minimum* individuals were collected, while in areas with moderate and low disturbance we found 11% and 28% of *M. minimum* individuals. Richness was pooled by treatment combination and all combinations had 14-15 species with the exception of 2023 ant communities in areas with the lowest disturbance (23 species). Estimated Shannon diversity was highest in two ant communities collected in low disturbance in 2023, which comprised four of the top eight community diversity estimates. Ant communities in ordination space show distinct groupings between the year of collection. Communities in areas of low disturbance in 2023 have the largest ordination distance, both between communities in high and moderate disturbance, as well as communities collected in 2021 indicating their uniqueness. Overall, ant numbers, species richness, and communities were altered due to forest damage by tornado, and areas with the least disturbance showed the most recovery three years post-disturbance.

An optimized artificial pathogenicity assay for brown spot needle blight on radiata pine: insights from the *Dothistroma-radiata* pathosystem

Rowan Christopher[1], Rhys Eshelman[1], Stuart Fraser[2], Sai Arojju[3], and Caterina Villari[1]
[1]University of Georgia; [2]New Zealand Bioeconomy Science Institute; [3]Radiata Pine Breeding Company

Lecanosticta acicola, the causal agent of brown spot needle blight (BSNB), is a pathogen of pines that colonizes and kills the needles, resulting in premature needle drop. The loss of photosynthetic capacity of affected trees causes stunted growth and may predispose affected stands to secondary stressors. As management options are being explored, the use of genetic resistance shows promise, as demonstrated by recent results with loblolly pine (*Pinus taeda*) showing genetic variance in BSNB resistance across families. While the pathogen is native to the American Southeast, it is invasive across the Northern Hemisphere, with reports of severe defoliation in some of the non-coevolved host species, such as radiata pine (*P. radiata*), the most widely planted pine species in the world. Among the countries where radiata pine is widely planted, and for which a BSNB epidemic would be economically and ecologically devastating, is New Zealand, where the pathogen is still absent. In preparation for potential future introductions, Radiata Pine Breeding Company (RPBC) is exploring proactive breeding efforts. To support these breeding efforts, resistance screening operations need a reliable inoculation protocol that is tailored to radiata pine, which is currently missing. In greenhouse screenings, environmental factors such as humidity, light, and temperature have all been found to influence BSNB disease severity. However, the relationship between the

length of needle wetness and BSNB disease severity has not been thoroughly investigated, despite being a critical factor for the infection of radiata pine with a close relative of *L. acicola*, *Dothistroma septosporum*. In this study, we sought 1) to adapt and validate a recently developed *L. acicola* inoculation protocol, which has been successfully deployed with loblolly pine, for use with radiata pine, and 2) to better understand the role of needle wetness duration in symptom development. The study comprised the inoculation of 180 seedlings with different combinations of treatments, in a completely randomized block design, and is currently ongoing. Results will lay the foundation for future resistance screening efforts into the BSNB-radiata pine pathosystem, as well as for investigations requiring disease development in controlled environments, such as those studying host-pathogen interactions.

Riparian responses to salinization: Linking plant diversity, phytochemistry, and organic matter inputs

Maggie Herrmann[1], Michelle-Evans White[1], Sally Entrekin[2], Samuel Dias[1], Connor Foley[1], Misty Goings[2], Clay Prater[1], Cale Prosen[2], Vien Tran[1], Lilia Stemet[3], Beck O'Neill[1], Ana Ortegon[1], and Natalie Clay[1]
[1]University of Arkansas Fayetteville; [2]Virginia Polytechnic Institute and State University; [3]University of Arkansas Monticello

Riparian ecosystems are highly productive habitats that support a diverse assemblage of vegetation which buffers freshwater bodies, traps sediment, and delivers organic matter to adjacent aquatic systems. These systems are increasingly threatened by soil and freshwater salinization, which can alter plant phytochemistry and reduce species diversity, richness, and evenness and thus the quantity and quality of stream inputs and services. Despite their ecological importance, the effects of salinization across sodium gradients on the phytochemistry and community composition of inland riparian plants remain poorly understood. To address this gap, we conducted a year-long greenhouse paired riparian-stream mesocosm experiment where both systems simultaneously received one of six NaCl addition levels: 100, 200, 300, 400, 500 mg/L NaCl or just water as controls. An additional two treatments were added where just the riparian soil or stream received salt additions (n = 5 replicates per treatment; total N = 40 mesocosms). Salt treatments were added to each mesocosm once weekly. Additionally, we measured soil conductivity, litterfall, plant diversity and height, and leaf chemistry. After ~4 months soil conductivity averaged 73, 78, 149, 117, 192, and 199 uS/cm for controls through 500 mg/L NaCl addition, respectively. Mesocosms had ~56 plant species across all treatments with an average of ~17 per mesocosm. Control treatments had the highest diversity (H'=1.73) and richness (~8) and the 500m/L treatments had the lowest (H'=1.41,~7 respectively). Overall, control treatments were 19% more diverse and ~10% richer than 500 mg L treatments. Litterfall averaged .4994 mg/m^{-2} across treatments and was highest in the 100mg/L treatments (8520 mg/m^{-2}) and lowest in the 400mg/L treatments (2330 mg/m^{-2}). Litterfall chemistry will be analyzed and discussed. Together these results suggest that salinization may reduce riparian plant diversity and richness. Lower plant diversity combined with alterations to soil conductivity and declines in litterfall rate as salinization increases are likely to alter the quality and quantity of organic matter reaching adjacent streams.

M.S. STUDENT COMPETITION

Assessing Acelepryn: A systemic insecticide for Nantucket pine tip moth

William Thayer[1], David Clabo[1], Cassandra Waldrop[1], Christopher Asaro[2], and Elizabeth McCarty[1]
[1]University of Georgia; [2]USDA Forest Service-SRS

The Nantucket pine tip moth (*Rhyacionia frustrana*) (NPTM) is a problematic pest of loblolly pine, whose larval stage feeds on pine shoots. NPTM damage can lead to reduced short-term growth, tree form damage, and rarely, tree mortality in young individuals. Prior NPTM management involved spraying contact insecticides certain times of the year based on spray timing models, which are often unreliable. Modern NPTM management usually involves systemic insecticides, which have varying results in efficacy and longevity. Acelepryn (active ingredient chlorantraniliprole) is an insecticide that was recently labeled for use in forest nurseries. A high-dose treatment can suppress NPTM into the second growing season in planted loblolly pine stands. Numerous insecticide treatments, including three Acelepryn treatments, are being assessed to determine longevity of NPTM suppression and subsequent effects on pine growth metrics. On three sites in the Georgia coastal plain, containerized and bareroot loblolly pine seedlings were planted in a recently clearcut stand. In the nursery, containerized seedlings received the following insecticide treatments via a specialized applicator tool: Acelepryn low-dose, Acelepryn high-dose, fipronil, CoreTect pellets, and untreated control. Bareroot seedings were Acelepryn high-dose rate only. NPTM infestation rates and tree growth metrics are being assessed for three growing seasons. This presentation will cover the first growing season infestation and pine growth metric results. Infestation rates for all treatments were below 16.1% throughout the growing season and were significantly lower than controls from June – October. Mean infestation rates were below 10% in all Acelepryn treatments throughout the first growing season. Mean control infestation rates were > 50% later in the season. Tree height and groundline diameter among treated trees were higher than that of controls. A tree volume index was produced using both tree height and groundline diameter, and treated trees amassed more volume than controls during the first growing season. These results demonstrate that Acelepryn applied at high-dose, low-dose, and to bareroot seedlings can effectively suppress NPTM infestations for one growing season. Effective options for Acelepryn dosing and planting methods could offer land managers more flexibility for NPTM management.

Blight and beetles: Indirect impacts of brown spot needle blight on loblolly pine health

Daniel Blaine Kimball[1], Courtney M. Siegert[1], Ashley N. Schulz[1], Adam D. Polinko[1], John W. Thomason[1], Brian T. Sullivan[2], and Kristy M. McAndrew[1]
[1]Mississippi State University; [2]USDA Forest Service-SRS

Brown spot needle blight (BSNB), a disease caused by the native fungal agent *Lecanosticta acicola*, has recently begun infecting mature stands of loblolly pine (*Pinus taeda*). This is of financial and ecological concern because of the prevalence of loblolly pine as a commercial species in the Southeastern United States. While BSNB infrequently causes direct mortality in loblolly pine, it kills healthy needles which limits photosynthetic capacity, ultimately causing decreased diameter growth rate and increased stress. Despite being known as a major stress agent, limited research exists which examines the impacts of this disease on secondary forest health concerns. Here, we examine relationships between BSNB severity and secondary biotic risks; namely, we explored the effects of BSNB severity on initial choice and subsequent success of colonization by native bark beetles. We evaluated initial attraction of southern pine beetle (*Dendroctonus frontalis*) and eastern

five spined engraver beetle (*Ips grandicollis*) through a four-way choice assay using phloem samples from trees with varying severities of BSNB infection. Colonization success from trees of varying severities was also assessed by i) documenting whether pairs of beetles attached to harvested cross sections successfully entered the cross section and ii) measuring gallery length, number of eggs laid, and larval survival after two weeks. This research will help characterize biotic forest health risks associated with BSNB in loblolly pine systems, and will support existing risk assessment systems so that forest landowners can better prepare for likely future disturbances.

Forest and tree-level carbon responses to beech leaf disease

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Beech leaf disease (BLD), caused by the foliar nematode *Litylenchus crenatae*, is a fatal and rapidly spreading disease affecting American (*Fagus grandifolia*), European (*F. sylvatica*), and other ornamental beech species across eastern North America. This disease causes distinct foliar symptoms, including dark green interveinal banding, leaf crinkling, and leaf thickening. Over time, the disease results in reduced leaf and bud production, premature leaf drop, and branch dieback. Beech saplings may die within 1-3 years of infestation, while mature trees often decline over 6-10 years. Although BLD is expanding rapidly, many questions remain regarding its ecological impact. Our study sought to evaluate how this disease alters the carbon dynamics of American beech at the tree and forest scales. At the forest level, National Park Service (NPS) Inventory and Monitoring (I&M) plot data were used to estimate aboveground biomass (AGB) and aboveground carbon (AGC) in eastern National Parks affected by BLD. Biomass and carbon were calculated using National-Scale Volume and Biomass (NSVB) and carbon allometric equations. A paired t-test was used to compare AGB and AGC before and after BLD infestation to determine whether disease emergence corresponded with measurable shifts in forest-level carbon stocks. At the tree level, non-structural carbohydrates (NSCs), specifically sugars and starches, were extracted and quantified from trees that received chemical, silvicultural, or both treatments for BLD. Because NSCs reflect carbon assimilation, storage, and allocation, they provide an indicator of physiological stress and resilience. Moreover, NSC concentrations were used to assess whether actively managed trees exhibit carbon recovery relative to unmanaged, symptomatic trees. Together, our results advance understanding of how BLD alters carbon dynamics within individual trees and across forest stands, which contributes to broader efforts to quantify the impacts of emerging biological invasions on forest carbon cycling.

Conservation consequences in the Southern Appalachians: Does protecting hemlocks help or harm larval stream salamanders?

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The Southern Appalachian Mountains are known for their diversity and, like many other regions, are facing threats from invasive species. The hemlock woolly adelgid (*Adelges tsugae*) (HWA) threatens widespread decline of the eastern hemlock (*Tsuga canadensis*), an important foundational riparian species. Eastern hemlocks support hundreds of species, including some species endemic to the

unique habitat hemlocks create. Resource managers have been successfully managing HWA using imidacloprid, a broad-spectrum systemic insecticide. Imidacloprid and other new generation neonicotinoids were developed for their lower toxicity to vertebrates. However, these insecticide applications on hemlocks have been associated with lower adult stream-breeding salamander abundance in associated terrestrial habitats, raising concerns about potential non-target ecological effects. Plethodontids, a family of lungless salamanders, are particularly numerous and diverse in the Southern Appalachians. Many species have aquatic larval stages that rely on healthy stream habitats, like the ones fostered by eastern hemlock trees. This study evaluates whether hemlock imidacloprid applications affect aquatic salamander abundance and the availability of their macroinvertebrate prey. The prey availability investigation examines the abundance of the aquatic macroinvertebrate groups that make up a majority of larval stream-breeding salamanders prey base. We focus our prey availability investigation on the two most numerous genera in these streams, *Desmognathus* and *Eurycea*. Salamander prey macroinvertebrate includes the orders Ephemeroptera, Plecoptera, Trichoptera, and Diptera. Salamander abundance and prey availability at imidacloprid treated sites and untreated control sites are compared. A total of 26 sites (14 treated and 12 control) were sampled in the Appalachian regions of Georgia, Tennessee, and North Carolina. Aquatic salamanders and aquatic macroinvertebrates were sampled in May - July of 2021 and 2022. Data were analyzed using linear mixed-effects models. Initial results indicate a small but significant positive association of stream salamander and larval salamander abundance with hemlock conservation (treated) areas. Macroinvertebrate prey data analyses are in progress. Aquatic macroinvertebrate data will be further analyzed in the future to assess whether imidacloprid use in hemlock conservation areas negatively affects communities in these streams.

Forest heterogeneity as a driver of arthropod biodiversity patterns in northeast Mississippi

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Arthropods in forest ecosystems drive many processes through pollination, disturbance, nutrient cycling, and sustenance. The implications of arthropod biodiversity response to forest structure variation are essential to forest management, though often overlooked. This project evaluates the association between forest stand heterogeneity and arthropod diversity, with the hypothesis that stands composed of higher plant diversity will support greater arthropod diversity. In the John W. Starr Memorial Forest and Noxubee National Wildlife Refuge in northeast Mississippi, we established three plots in each of our six forested sites (two pine stands, two hardwood stands, and two mixedwood stands). Within each plot, one pitfall, funnel, and flight-intercept trap were established. All traps in each plot are being sampled biweekly from October 2025 to 2026, and collected arthropods are being identified to the family level with resulting data being used to calculate diversity indices. An inventory during early summer 2026 will quantify plant biodiversity metrics for each forest stand. Preliminary results will be discussed, including the dominant arthropod orders and families found in each forest type over time, and how the arthropod diversity indices relate to the vegetation diversity indices. This study is novel in that it is documenting arthropod activity and biodiversity during not only the growing season, but also late fall, winter, and early spring. Results of this study will be used to shed light on understudied arthropod guilds essential to forest health and function and inform management practices that promote biological diversity in forested ecosystems.

Identifying Fraser fir resistant to balsam woolly adelgid using near-infrared spectroscopy, machine learning, and proteomics

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Fraser fir (*Abies fraseri*) is an ecologically and economically important tree threatened by the invasive balsam woolly adelgid (*Adelges piceae*, BWA). Management strategies to control BWA at the forest scale have been largely ineffective; however, studies indicate that Fraser fir may exhibit varying levels of resistance to BWA on the landscape. Harnessing host resistance is a promising approach to prevent species extirpation from invasive pests but identifying resistant trees within the forest is often time consuming and destructive. Near-infrared (NIR) spectroscopy offers a non-destructive alternative to traditional host resistance screening methods by evaluating the chemical features of vegetation rapidly in the field. This study sought to evaluate the ability of machine learning models to distinguish between the NIR spectral signatures of three genotypes of Fraser fir with known levels of resistance (high, medium, and no resistance) to BWA. Data was collected from bark and needle tissue with a portable NIR spectrometer in June and August of 2024. The spectra were averaged by tree ID, and supervised classification models, including support vector machine and random forest, were used to assess the accuracy of the models based on tissue type and resistance level. Variable selection methods, including sparse partial least squares discriminant analysis (sPLS-DA), were implemented to identify spectral bands that contributed most to model performance. The highest 10-fold cross validated accuracy (78.3-87.5%) of the machine learning models occurred with spectra collected from bark when only the extreme resistance classes (high and no resistance) were evaluated. Variable selection models indicated that wavelengths relating to N-H stretching, which is commonly associated with plant proteins, were important in the high accuracy classification. As such, a Bradford assay was conducted on bark samples collected in June and August of 2024 to assess differences in the total protein concentration present between genotypes. This suggests that NIR spectroscopy can be coupled with machine learning to identify resistant Fraser fir, and proteins may be a distinguishing factor between resistance levels.

NOTES

2025 SFHWC Photo Salon 'Overall Winner'

Gall of cedar-apple rust *Gymnosporangium juniperi-virginiane*
Photographer: Ignazio Graziosi