Science and Program Highlights

Screening chestnuts for resistance to Phytophthora and blight

The American Chestnut Foundation (TACF) is beginning its second year of collaboration with the US Forest Service Resistance Screening Center (RSC) in Asheville, NC to screen chestnut seedlings for resistance to Phytophthora root rot disease (causal agent *Phytophthora cinnamomi*). TACF is also expanding its collaboration this year to include small stem assays for chestnut blight (causal agent *Cryphonectria parasitica*) at the RSC. Over 4600 plants will be tested between the two treatments in 2017.

As part of the collaboration between TACF and the RSC, TACF provided volunteers to assist with planting seed and randomizing seedlings. Volunteers on the project included local residents, students from UNC-Asheville and UNC Wilmington, the chapter president from Charlotte and the retired TACF geneticist. Volunteers will also help with pathogen inoculations in May and disease assessments through the summer and fall.

This collaborative project accelerates TACF’s capacity to screen and evaluate chestnut seedlings and provides a unique opportunity to engage the Asheville community in TACF and the USFS’s joint efforts to restore the American chestnut and promote the species’ comeback in the heart of its range. For more information contact Sunny Lucas at slucas02@fs.fed.us.

Assessing the habitat requirements of a forest beetle of potential conservation concern

Little is known about the diversity, ecology or conservation status of saproxylic insects (insects that utilize dead and decaying wood) in North American forests, despite well-documented declines of many related species in Europe. Whereas the European giant stag beetle, *Lucanus cervus*, is highly imperiled and the subject of intense study, for example, we know almost nothing about that species’ North American counterpart, *Lucanus elaphus*. With collaborators from the University of Mississippi (Ryan Garrick, (continued on page 2)
Louis Zachos), Wright State University (John Stireman) and the University of Georgia (Tom Sheehan), we recently published a paper on the ecology, genetics and distribution of *L. elaphus* in the Eastern United States (Insect Conservation and Diversity, in press). Ecological Niche Models based on precise occurrence records indicate that environmental conditions are suitable for the species across much of the southeastern United States but that lowland forests may be preferred. In addition, *L. elaphus* larvae were recovered from a wide range of hardwood log sizes and rot types in bottomland forests, suggesting that a variety of decomposing woody substrates provide suitable breeding habitat for the species. Although the conservation status of *L. elaphus* remains unknown, this study provides some much-needed information about the habitat requirements of the species. For more information, contact Michael Ulyshen (mulyshen@fs.fed.us).

**2016 Highlights from the Forest Health Monitoring program**

In 2016, sustained drought and above average temperatures across a large portion of the South were the driving force behind several major disturbances, including wildfire and unprecedented *Ips* bark beetle activity that materialized during the fall. Drought conditions were most severe in the Southern Appalachians and adjacent parts of the Cumberland Plateau and Piedmont. Based on reporting from state cooperators and FHP staff, the FHM program documented 44,000 acres with tree mortality - mostly due to fires, *Ips* bark beetles, southern pine beetle and drought, and 770,000 acres with defoliation - mostly due to forest tent caterpillar and gypsy moth. In addition, multiple tornadoes and Hurricane Matthew caused varying degrees of damage over an area encompassing 2.2 million acres, most of which was concentrated in southern GA. *Ips* bark beetle activity was unusually severe in northern GA and AL, where spots measuring up to 50 acres in size were reported. Although 15,000 acres of *Ips*-related mortality was documented, this represents just a portion of what is out there since most trees began turning brown during the winter after the 2016 reporting period had ended. For more information, please contact Chris Asaro (casaro@fs.fed.us).

**Port project on interception of invasive weeds receives presentation honors**

Investigative field research examining the introduction of invasive plant propagules into the Port of Savannah was completed at the end of February 2017. This research, in cooperation with US Customs and Border Protection (Dept. of Homeland Security), USDA-APHIS, PPQ, the Georgia Forestry Commission, and Arkansas State and Columbus State Universities, was presented at the annual Florida Exotic Pest Plant Council Meeting, held in Melbourne, FL. Thus far, over 30,000 seeds, putatively from South and Central America, have been sorted and counted. Of those, we have morphologically identified at least one Federal Noxious Weed species, and DNA barcoding has preliminarily identified another. Dr. Chelsea Cunard, the Post-Doctoral Research Associate on this project, provided a presentation on the current data analyses and floristic surveys associated with the entire scope of this cooperative research. Jarron Gravesande, the Undergraduate Research Assistant, presented one of few undergraduate posters at this well-attended conference.
meeting, titled “Investigating changes in composition of the exotic plant community entering the Port of Savannah.” Jarron won 3rd place among the student entrants, along with a $50 prize. Please join the Lucardi Lab and collaborators at Arkansas State in congratulating Jarron! For more information, contact Rima Lucardi at rlucardi@fs.fed.us.

Dr. Chelsea Cunard (left) and Jarron Gravesande (right) celebrate his win in the student poster contest

Study optimizing trap placement for woodborer detection receives presentation honors

Trap placement is an important consideration when designing detection strategies for woodboring insects, but few general guidelines have been developed. A recent analysis from the southeastern United States suggests that the number of bark- and wood-feeding beetles detected by flight intercept traps increases with increasing trap height in the forest interior (Ulyshen and Sheehan, in review). Ambrosia beetles generally exhibit the opposite pattern, however, being more concentrated near the forest floor. Although these findings suggest detection strategies should aim to sample at multiple heights, the situation at the forest edge, where environmental conditions are more consistent from the canopy to the ground, may be different. In an ongoing collaboration between SRS and UGA entomology, we are investigating these questions by trapping at three heights at both forest edge and interior locations. Master’s student Tom Sheehan recently presented preliminary results from this study at the 2017 Georgia Entomological Society meeting in a talk for which he was awarded the T.L. Bissell Award for the best oral presentation by a M.S./B.S. student. Congratulations Tom! For more information, contact Mike Ulyshen at mulyshen@fs.fed.us.

Silver flies represent new potential for hemlock woolly adelgid control in the eastern U.S.

Western U.S. populations of two species of silver flies (Leucopis spp.) have been approved for release in the eastern U.S. to help combat the hemlock woolly adelgid (HWA), a devastating pest of eastern and Carolina hemlocks. A recent study with collaborators from the University of Vermont (UVM), Oregon State University, Cornell University and the US Forest Service (NRS and SRS) demonstrated that silver flies from the Pacific Northwest are capable of feeding and developing to the adult stage on HWA in Tennessee and New York. These flies, which are active in the spring, represent a much-needed compliment to Laricobius beetle predators that are active in the winter. The paper, lead-authored by UVM master’s student Kyle Motley, is in press in the Bulletin of Entomological Research. For more information, contact Bud Mayfield at amayfield02@fs.fed.us.
**In the News**

**Scott and Kelly Horn receive “Open Arms Award” from the University of Georgia**

SRS 4552 entomologist Scott Horn and his wife Kelly Horn received the Mary Ann Kelly Open Arms Award, which honors one or more people in the University of Georgia (UGA) community who have gone above and beyond their formal duties in facilitating the presence of international students and/or scholars at UGA. The Horns provided physical and emotional assistance for Yanzhuo Zhang, an international UGA faculty member, after she was severely injured in a traffic accident while performing field work.

Zhang’s husband was out of the country when the accident occurred and the Horns provided the airline ticket that brought him to Athens to help care for Zhang while she was in the hospital. Kelly Horn took leave from work to help Zhang understand the medical procedures and paperwork related to her injuries, and the Horns provided Zhang’s family with a hotel room close to the hospital. The Horns also rallied the UGA community to assist Zhang’s family with their medical expenses, with Zhang’s story appearing in several local media outlets. Scott and Kelly received the award April 4, 2017 at a ceremony in the Georgia Center Magnolia Ballroom.

**Forest Service emeritus scientist Jim Miller donates herbarium to Auburn University**

The herbarium collection of the George W. Andrews Forestry Sciences Laboratory (USFS) was recently donated to the Auburn University Museum of Natural History (AUMNH). An herbarium is a collection of pressed and dried plants that are used in all aspects of plant research from biogeography to genetics. Approximately 3,000 herbarium sheets representing over five decades of work were donated to ensure the long term care and curation of these specimens. The donation, arranged by Dr. James Miller, emeritus SRS Research Ecologist, in cooperation with Mr. Curtis Hansen, Herbarium Collections Manager at AUMNH, represents many decades of work by staff at the George Andrews Laboratory. Significant collections include those of Miller, which formed the basis for several books he authored including, Forest Plants of the Southeast and Their Wildlife Uses (UGA Press), Nonnative Invasive Plants of Southern Forests (USFS GTR SRS-62) and A Field Guide for the Identification of Invasive Plants in Southern Forests (USFS GTR SRS-119). Other important holdings are collections Harold Grelen made in the 1950s and 1960s from the Escambia Experimental Forest in Escambia County, Alabama. Once incorporated into the Freeman Herbarium, these specimens will be available online and in person for researchers from across the world.
Dr. Rima Lucardi, Research Ecologist with SRS-4552), returned to her alma mater in Starkville, MS, for the annual celebration of Charles Darwin’s (1809-1882) birthday and publication of his seminal work On the Origin of Species. She was the graduate student organizer of the 2009 Bicentennial Celebration of the English naturalist and geologist’s birthday at Mississippi State University (MSU). The 2017 weeklong program highlighted the significance and importance of diversity in the sciences. She held a tea-time program titled “Unconscious bias: How race and gender can affect your success in science”, and a scientific seminar “Hitchhiking around the world: Invasive plants in the South and how they get here.”

Dr. Rima Lucardi (left) presents to a campus-wide audience at Mississippi State University on during Darwin Week in February 2017

New educational videos highlight invasive species

The Southern Research Station recently teamed with filmmaker Rob Nelson of “Untamed Science” to produce educational videos highlighting various aspects of research in the Station. SRS 4552 and collaborators were recently involved in the development of two of these videos...watch them here!

Invasive Species - Fight ‘em or Throw in the Towel?:

Hope for the Hemlocks: Restoring Balance:
https://www.srs.fs.usda.gov/video/hope-for-hemlocks/

Emeritus scientist Jim Hanula receives the Georgia Entomological Society Founder Award

Scott Horn delivered the 2017 Founder’s Lecture at the annual Georgia Entomological Society meeting in April. The lecture honored Jim Hanula for his long and productive career, as well as his commitment and involvement with the Society. After majoring in Forest Management at Texas A&M, Jim earned his MS and PhD from the University of Georgia, studying European elm bark beetle and the Southern pine coneworm, respectively. He then did a stint in Connecticut working as a turf and ornamental entomologist focusing on black vine weevil and Japanese beetles. With the Forest Service in Athens, GA, Jim was one of the first FS entomologists to examine the functional role of insects in forests. Early work focused on the diet of an endangered woodpecker, how prescribed fire effects insect communities, and the role of dead wood in arthropod diversity and abundance. Jim’s recent work focused on invasive insects including hemlock woolly adelgid, redbay ambrosia beetle and kudzu bug. Jim examined the effect of Chinese privet on riparian forest ecosystems and on biological control of this weed. In addition, he conducted several studies on pollinators in forest habitats. His work on pollinators was recognized by the North American Pollinator Protection Campaign and the Forest Service with the 2007 Celebrating Wildflowers Award. Scott Horn also received an award from the GES for his lecture honoring Dr. Hanula. Congratulations Jim and Scott!!

Scott Horn presents Dr. Jim Hanula with the Georgia Entomological Society Founder’s Award
Southern USFS entomologists contribute to Northeastern Southern Pine Beetle Forum

In March 2017, Southern entomologists Brian Sullivan (SRS), Steve Clarke (FHP) and John Nowak (FHP) took their expertise northward to participate in the “Southern Pine Beetle (SPB) in the Northeast Research and Management Forum” at Brookhaven National Laboratory on Long Island, New York. The SPB is an infamous forest pest in the southern U.S., but in recent years has caused widespread pine mortality in the Northeast, where historically it has not been a major problem. Sullivan, Clarke and Nowak joined their northern USFS colleagues in providing management information to over 250 attendees including local politicians, concerned citizens, and northeastern regional natural resource managers.

Staff Changes

Dr. Kier Klepzig to become Director of Joseph W. Jones Ecological Research Center

Dr. Kier Klepzig, Assistant Director for Research for the Southern Research Station and one-time Project Leader of SRS-4552, has accepted a position as Director of the Joseph W. Jones Ecological Research Center at Ichauway, Georgia. The Jones Center is a historic, privately funded forest and research institute on 30,000 acres of beautiful longleaf pine habitat. As director, Kier will be in charge of all operations, including the 85 full time employees who work there. Kier begins his new post at the Jones Center on July 1, 2017. Congratulations, Kier, on this new and exciting phase of your career…you will be missed!

Dr. Forrest Oliveria retires from Forest Health Protection

Forrest Oliveria has retired! He joined FHP as an entomologist in 1979. In 2001, he became the Field Office Representative for the Alexandria Field Office, a position he held until he retired. We thank Forrest for his many years of dedicated service and wish him all the best during this next phase of his life!

Dr. Forrest Oliveria recently retired from his post as the Field Office Representative for the FHP Alexandria Field Office in Pineville, Louisiana.
Technology Transfer

Publications (in print/press):


Submitted Publications (in review):


Presentations and Lectures:


2. Fraedrich, S.W. 2017. Laurel Wilt. Forest Health and Protection, School of Forestry and Natural Resources, University of Georgia, Athens, GA, April, 2017 (invited lecture; Dr. Caterina Villari).


6. Miller DR, Crowe CM, Sweeney JD. 2017. Effect of trap height on catches of bark and wood boring beetles in a stand of white oak and shortleaf pine in Georgia. 27th USDA Interagency Research Forum on Invasive Species, Annapolis MD. (Poster)


USDA Forest Service

Forest Health Protection, Southern Region
http://www.fs.usda.gov/main/r8/forest-grasslandhealth

Southern Research Station
RWU 4552: Insects, Diseases and Invasive Plants of Southern Forests