



Southern Forest Health Research and Management Update



Winter 2016

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This newsletter is a joint publication of:

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Science and Program Highlights

Improving Noxious Weed Interception at Port of Savannah

Federally-listed noxious weed species (FNW) are regulated by USDA-APHIS-PPQ, and their interstate transport is limited. These species are typically considered invasive and may be quarantined, inspected, seized, etc., to limit spread in the United States. Forest Service research is now underway, in cooperation with other state and federal agencies to improve interceptions and identification of weed species entering the U.S. from abroad, with great support and cooperation from U.S. Customs and Border Protection (Dept. of Homeland Security), Georgia Ports Authority, and Georgia Forestry Commission. The Port of Savannah is the largest single container terminal in North America. Our research at the port aims to identify entering species, probabilities of establishment, develop a DNA barcoding pipeline for select species, and work with herbaria to deposit and digitally record plant material of interest. We expect the initial program to provide vital data to Customs and Border Protection, who are balancing agricultural security with expediting agricultural trade and policy.

For more information, please contact Rima Lucardi at rlucardi@fs.fed.us.



Samanth Worthy (left), a Masters Student at Columbus State University, is prepared to begin sampling seeds from containers. Cooperation between U.S. Customs and Border Protection, Georgia Forestry Commission, and the U.S. Forest Service is key to discovering how much international trade influences plant invasions in the Southeast.

First Release in the Carolinas of New Hemlock Woolly Adelgid Predator



Bryan Mudder releases predator beetles on infested hemlock trees near Asheville, NC. Photo by Bud Mayfield.

On Friday Jan 8, 2016, U.S. Forest Service scientists with the Southern Research Station and Forest Health Protection released just over 1200 *Laricobius osakensis* beetles on eastern hemlock trees in North and South Carolina. Reared at University of Tennessee Knoxville's Lindsay Young Beneficial Insects Lab, the predator beetles are natural enemies of the hemlock woolly adelgid, an invasive insect that kills hemlock trees in eastern North America.

Laricobius osakensis and a related species, *Laricobius nigrinus*, are being used as biological control agents to reduce populations of hemlock woolly adelgid, with the ultimate goal of increasing the survival and improving the health of infested hemlock trees, allowing them to continue to grow in the mountain landscapes where they often function as a foundation species, shading streams and providing essential habitat to birds and insects.



***Laricobius osakensis*, predator beetle of hemlock woolly adelgid, on hemlock twig. Photo by Bryan Mudder.**

Laricobius osakensis is of particular interest because it is endemic to the same region of Japan as the adelgid and coevolved with the pest. Last week's releases near Asheville and Black Mountain in North Carolina, and along the South Saluda River in South Carolina, were the first releases of *L. osakensis* in these states. Through field nursery reproduction and subsequent releases, the Forest Service hopes to establish at each of these locations a growing population of predators that will continually feed on the adelgids, giving hemlock trees a fighting chance.

Article by Bryan Mudder, SRS Forestry Technician, posted on January 13, 2016 by Zoe Hoyle in the Compass Live Weekly Newsletter. For more information, email Bryan Mudder at bmudder@fs.fed.us. You can see more photos of the release on Bryan's blog: <http://forestpestresearch.blogspot.com/>.

Southern Pine Beetle (SPB) Conditions Across the Region

In 2015, SPB infestations in Mississippi were significant for the 4th consecutive year, primarily on the National Forest system. As reported in the Summer Issue, the most recent activity occurred primarily on the Bienville National Forest. A late summer drought that extended into the fall was also responsible for widespread Ips activity in Mississippi and several other states.

Significant SPB activity was not limited to Mississippi this year, however, but also popped up in Alabama. Aerial detection flights across all 67 Alabama counties revealed 378 spots impacting approximately 24,000 trees. Over 75% of these spots were concentrated in 3 counties in SW Alabama: Choctaw, Clarke, and Marengo.

In Virginia, ongoing SPB activity has continued south of Virginia Beach and on Chincoteague/Assateague islands along the Eastern Shore of Virginia. This activity has been ongoing for several years and is associated, to a large extent, with very mature stands of loblolly growing on challenging sites impacted by past storms and saltwater intrusion. Across the remainder of the Southern Region, there were scattered reports of isolated SPB activity, all of which were unremarkable in extent.

Staff Changes

Research Entomologist Jim Hanula Retires!

After a long and distinguished career, **Jim Hanula** has decided to trade in his microscope for a fly rod. Jim started as a Research Entomologist with the USDA Forest Service's Southern Research Station in Athens, GA in 1991. His work has been as diverse as the insects he has studied. A major focus of Jim's work has been aimed at understanding the importance of forest insects to other species and managing for forest insect biodiversity. Jim spent 10 years investigating the arthropod diet of the red cockaded woodpecker and results from this work were used in the revision of the woodpecker's recovery plan. Other major investigations of forest insect communities included effects of riparian hardwood forest gap size and age on insects and insect-feeding birds, the effects of prescribed burning on ground dwelling arthropods, and the role of dead trees in supporting forest insect biodiversity.

Invasive insects have been another focus of Jim's work, including studies on hemlock woolly adelgid, redbay ambrosia beetle and kudzu bug. Invasive plants didn't escape his research, either, as evidenced by a long-term (10 years and counting) study investigating the effects of Chinese privet in southern bottomland forests. In addition, a biological control agent for Chinese privet has been studied and a petition submitted for its release. Lately, Jim has become quite the bee taxonomist and has studied how they respond to Chinese privet removal and how pollinator communities are structured within different forest types.



Jim Hanula's new office!

His work on bees and butterflies has been recognized by the North American Pollinator Protection Campaign and the U.S. Forest Service with the 2007 Celebrating Wildflowers Award. Jim is also active in the Southern Forest Insect Work Conference and was awarded the A.D. Hopkins Award for outstanding forest entomologist in 2009. He also served as project leader for the Insects and Diseases of Southern Forests Unit.

Thankfully, Jim intends to stay linked with SRS as an Emeritus Scientist. We sincerely wish Jim all the best in retirement and hope he has many safe and memorable travels!



SRS Director Rob Doudrick (left) congratulates Jim Hanula upon his retirement. Photo by Jennifer Parsell.

Jess McKenney returns to SRS 4552



SRS 4552 welcomes **Jess McKenney** back to the work unit in Pineville, LA. She returns after a 20-month hiatus with the Colorado Department of Agriculture as a Biocontrol Specialist. Prior to going to Colorado, Jess was a Research Associate with the LSU AgCenter working under a cooperative agreement with SRS 4552. She returns in a similar capacity as an LSU Research Associate working with Rabi Olatinwo. Jess has worked with non-native invasive plant and insect species in either detection or control for the last 16 years. She will be working on invasive pests and their associated diseases.

Jess conducting Russian knapweed field work in the San Luis Valley, Colorado.

Andy Whittier Joins SRS 4552



Andy Whittier is a new affiliate Research Forester with the Southern Research Station in Asheville, NC. Andy's affiliate status is as a staff member with the Camcore Cooperative at North Carolina State University where he has been employed since 2003. Over the last 13 years, he has worked on several different domestic conservation projects under a partnership between Camcore and the USFS. Andy now works with Bud Mayfield and NCSU's Robert Jetton on hemlock restoration and population assessment as well as projects involving red spruce and Fraser fir conservation.

Jim Morrow, Acting Business Manager for SRS 4552



Jim Morrow is the Acting Business Manager for SRS 4552 in Asheville, NC. Jim started his government career in the U.S. Navy as an Electronics Technician. In the intervening years between the military and the Forest Service, Jim was a licensed water and wastewater operator for the City of Charleston in SC; drove an 18 wheeler; wrote computer code for a couple of companies before becoming a manager and chef for several restaurants. He has been with the Forest Service for more than 23 years in Business Operations and is detailed to the SRS 4552 Unit from Office Services through February 2016.

Forest Health Protection (FHP) Hires New Technicians



Benjamin Parpart is a new Biological Science Technician with FHP in Pineville, LA. He graduated from Louisiana State University at Alexandria in 2007 with an Associate of Science. He began working for the Forest Service as a student and was converted to permanent fulltime upon graduation. For the past ten years, he has worked for the SRS 4552 Unit as a Biological Science Technician. Prior to joining the Forest Service, Ben worked various jobs including auto-parts salesman, construction worker, meat cook/cutter, and oilfield roustabout.



Aaron Rachal is also a new Biological Science Technician with FHP in Pineville, LA. He obtained a BS in Forestry with a concentration in wildlife habitat management at Louisiana Tech in Ruston, LA. During his time as a student at Louisiana Tech, he also worked on the Calcasieu RD of Kisatchie National Forest under the Pathways Program. As a Pathways student, he worked on forest management for the red-cockaded woodpecker and also many other projects in wildlife, recreation, timber, and fire.

Anthony Elledge returns to FHP

After more than a year working in the Chief Information Office, Anthony Elledge has returned to FHP, Asheville Field Office as an Information Technology Specialist. Anthony will be working on FHP databases and will manage the FHP webpage and GIS system.

Technology Transfer

Publications (in print/press):

1. Fraedrich, S.W., C.W. Johnson, R.D. Menard, T.C. Harrington, R. Olatinwo, and G.S. Best. 2015. First report of *Xyleborus glabratus* and laurel wilt in Louisiana, USA: the disease continues westward on sassafras. *Florida Entomologist* 98(4): 1266-1268.
2. Hughes, M.A., J. A. Smith, R. C. Ploetz, P. E. Kendra, A. E. Mayfield, III, J. L. Hanula, J. Hulcr, L. L. Stelinski, S. Cameron, J. J. Riggins, D. Carrillo, R. Rabaglia, J. Eickwort, and T. Pernas (in review). Recovery Plan for Laurel Wilt on Redbay and Other Forest Species Caused by *Raffaelea lauricola* and Disseminated by *Xyleborus glabratus*. *Plant Health Prog.* 16: 173-210, doi:10.1094/PHP-RP-15-0017.
3. Miller, D.R., C. M. Crowe, P. D. Mayo, P. J. Silk and J. D. Sweeney. 2015. Responses of Cerambycidae and Other Insects to Traps Baited with Ethanol, 2,3-Hexanediol and 3,2-Hydroxyketone Lures in North-Central Georgia. *J. Econ. Entomol.* 108: 2354–2365.
4. Miller, J.H., E.B. Chambliss, and N.J. Loewenstein. (in press) 2010 (slightly revised 2012, 2013 and 2015). A field guide for the identification of invasive plants in southern forests. Gen. Tech. Rep SRS-119. Asheville, NC. U.S. Department of Agriculture, Forest Service, Southern Research Station. 126 p.
5. Miller, J.H., S.T. Manning, and S.F. Enloe.(in press) 2013 (slightly revised 2015). A management guide for invasive plants in southern forests. Gen. Tech. Rep SRS-131. Asheville, NC. U.S. Department of Agriculture, Forest Service, Southern Research Station. 120 p.
6. Shepherd, W.P., B.T. Sullivan, A. E. Mayfield III, and R.C. McDonald. 2016. Olfactory Responses of the Hemlock Woolly Adelgid Predator, *Laricobius nigrinus* (Coleoptera: Derodontidae), to Natural and Synthetic Conifer Volatiles. *Journal of Entomological Science*, 51: 29-42.

Submitted Publications (accepted/in review):

1. Case, A.E., A.E. Mayfield, S.L. Clark, S.E. Schlarbaum, and B.C. Reynolds. Abundance and frequency of Asiatic oak weevil (*Cyrtopistomus castaneus*) (Coleoptera: Curculionidae) and associated defoliation on American, Chinese, and hybrid chestnut (*Castanea*) seedlings. *J. Insect. Sci.* (in review).
2. Ulyshen, M.D., Seibold, S., and Müller, J. in review. Bark coverage and insects affect rates of wood decomposition in a subtropical forest. *Applied Soil Ecology*

Presentations and Lectures:

1. Heminger, Ariel, Albert Mayfield, Gregory J. Wiggins, Jerome F. Grant, Joseph Elkinton, Thomas McAvoy, Andrew Tait, Scott Salom. 2015. Impact assessment of *Laricobius nigrinus* (Coleoptera: Derodontidae), a predator of hemlock woolly adelgid, *Adelges tsugae* (Hemiptera: Adelgidae). Entomological Society of America Meeting, 16 Nov 2015, Minneapolis, MN.
2. Jetton, R.M., W.A. Whittier, A.R. Tait, W.S. Dvorak, G.R. Hodge, K.M. Potter, M.E. Tighe, L. Campbell, J. Hastings, Z. Powers, B.S. Crane, A.E. Mayfield III, and J.R. Rhea. 2015. Update on the Camcore domestic conservation program in the United States. 2015 Camcore Annual Meeting, November 8-15, College Station, TX.
3. Lucardi, R.D. 2015. "CREEP! The saga of cogongrass (*Imperata cylindrica*) from pest to international invader." Department of Plant Biology, University of Georgia. November 2015. Athens, GA (Invited presentation)
4. Mayfield, A. 2015. Pesticides, Predators, Patch Cuts and Plantings: Persistent Peril or Possible Promise for the Prized Eastern Hemlock? University of Georgia, Warnell School of Forestry & Natural Resources Seminar, 17 Sep 2015, Athens, GA.
5. Mayfield, A. 2015. Pesticides and Predators: Possible Promise for the Prized Eastern Hemlock? USDA-Forest Service Eastern Region Silviculture Workshop, and Roach-Bauer Forestry Forum, 8 October 2015, Warren, PA.
6. Mayfield, A.E., III. Invasive insect, pathogen and plant pests of eastern U.S. forests: facing the challenge. State of the Science on Non-Native Invasive Species, USDA Forest Service Research and Development Workshop, 8 Dec 2015, Phoenix, AZ.
7. Mayfield, A.E., III. Research updates on walnut twig beetle and hemlock woolly adelgid. Pesticide License Recertification Class, North Carolina Forest Service, 15 Dec 2015, Morganton, NC.
8. Miller, D.R. 2015. Traps, lures and methods for forest insects. USDA--FS Southern Research Station All-Researchers Meeting, Asheville NC, 17-19 November (poster).
9. Olatinwo, R., and S.R. Blomquist. 2015. Influence of El Nino southern oscillation on historical outbreaks of the southern pine beetle, *Dendroctonus frontalis* Zimmermann, in the southern United States. Presented at the Entomological Society of America 2015 Annual Meeting, November 15-18, 2015 at Minneapolis, MN. (Poster)
10. Ross, Darrell W., Arielle L. Arsenault, Nathan Havill, Albert Mayfield, Kimberly F. Wallin, Mark Whitmore. 2015. First releases of western US silver flies (Diptera: Chamaemyiidae) for biological control of hemlock woolly adelgid in the East. Entomological Society of America Meeting, 16 Nov 2015, Minneapolis, MN (poster).
11. Sumpter, K, Salom, S, Carlyle, B, Mayfield III, A, Anderson, T, McAvoy, T. (2015). Evaluating a Potential Area-wide IPM Strategy for Managing Hemlock Woolly Adelgid in the Eastern United States. Entomological Society of America Meeting, 16 Nov 2015, Minneapolis, MN.
12. Sweeney, J., P. Silk, P. Mayo, R. Webster, C. Hughes, K. Ryall, J. Gutowski, T. Mokrzycki, D. Miller, J. Francese, Q. Meng & Y. Li. 2015. Effect of trap color and trap height on detection of bark and wood boring beetles (Cerambycidae, Buprestidae, Scolytinae). Canadian Forest Service, National Forest Pest Management Forum, Ottawa ON. (Poster).

Other Tech Transfer:

1. Blomquist, Stacy; Olatinwo, Rabi; Shepherd, Will; Strom, Brian. Alexandria Country Day School Science Fair Judges, December 9, 2015.

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:
<http://www.srs.fs.usda.gov/idip/index.html>

