Southern Forest Health
Research and Management Update

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Science and Program Highlights

New "Mesoamerican Pine Beetle" Described by SRS Scientist and Collaborators

A newly-discovered species of tree-killing bark beetle in Central America, *Dendroctonus mesoamericanus*, has been recently described by a group of scientists including Southern Research Station (SRS) research entomologist Dr. Brian Sullivan (SRS 4552, Pineville, LA). Numerous studies by a team of scientists from the U.S., Mexico and Norway determined that the species is new to science and provided information needed to manage the insect, which may share responsibility with the southern pine beetle (*Dendroctonus frontalis*) for the catastrophic damage to pines in Central America in recent years. The two *Dendroctonus* species appear to work in cooperation to kill trees, and outbreaks of both may be more persistent and destructive than those of southern pine beetle alone. This discovery brings to light a potential exotic threat to the U.S. that was not previously known to exist. Read the full paper in the Annals of the Entomological Society of America (http://www.srs.fs.usda.gov/pubs/47987).

Adult mesoamerican pine beetle removing resin and boring dust from the entrance of its gallery. Photo by Brian Sullivan.

For more information contact Brian Sullivan at briansullivan@fs.fed.us.

Laurel wilt disease confirmed in sassafras in Louisiana

FHP pathologist Roger Menard and landowner John Cook examine sassafras trees dying from laurel wilt in Louisiana.

Laurel wilt, a deadly disease of redbay and other trees in the Laurel family, was confirmed for the first time in the state of Louisiana in the fall of 2014. A private landowner in Bernice, LA and an NRCS forester sought assistance from the Forest Health Protection (FHP) Alexandria Field Office after noting the rapid death of several mature sassafras trees. Plant pathologist Roger Menard and entomologist Wood Johnson examined nine trees with symptoms consistent with laurel wilt.

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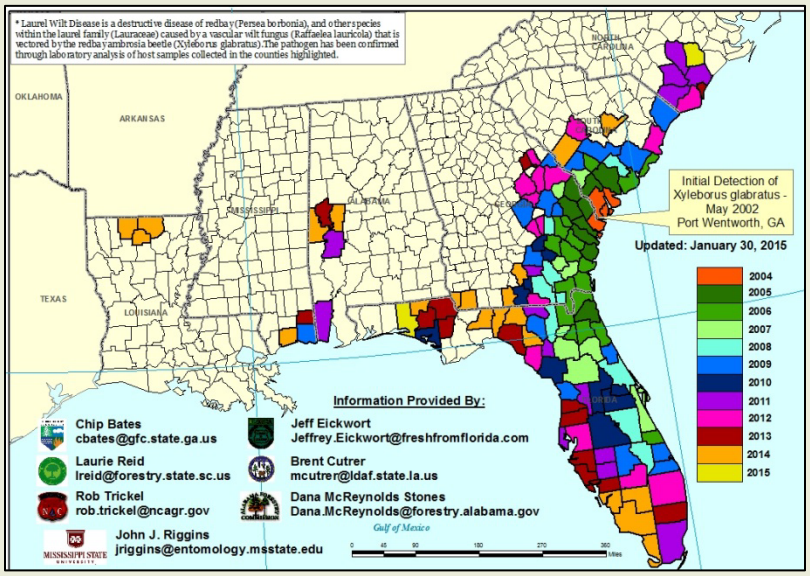
Plant pathologists Steve Fraedrich (SRS 4552) and Tom Harrington (Iowa State University) later isolated the laurel wilt pathogen (*Raffaelea lauricola*) from several of these trees, and specimens of the beetle vector (*Xyleborus glabratus*) were also collected. Subsequent surveys in Louisiana using beetle traps and wood tissue analysis indicated the disease is present in Union, Claiborne, and Lincoln Parishes. All cases thus far have been found in otherwise healthy sassafras, and either open-grown or located on forest edges. An expanded survey will be conducted in 2015 involving the LA Dept. of Agriculture and Forestry and the AR Forestry Commission. In addition to sassafras, laurel wilt has killed millions of redbay trees throughout the Southeastern U.S. and also kills avocado.

For more information please contact Wood Johnson at woodjohnson@fs.fed.us.



Distribution of laurel wilt disease in the Southeastern US as of January 30, 2015. http://www.fs.usda.gov/main/r8/forest-grasslandhealth

In the News

Mike Ulyshen receives US Forest Service Early Career Scientist Award

After receiving the 2014 Southern Research Station Director's Early Career Scientist Award, Dr. Mike Ulyshen (SRS 4552, Athens GA) was subsequently honored at the national level by receiving the USDA Forest Service Early Career Scientist Award in February 2015. Mike's highly-productive research program has included biology of the redbay ambrosia beetle, biodiversity impacts of Chinese privet, biological control of emerald ash borer, and ecological roles of wood decaying organisms. Mike was presented with the award in Washington D.C. by Jim Reaves, Forest Service Deputy Chief for Research and Development.

Michael Ulyshen. Photo by Sean Cook.

Forest Service participates in Children's Mardi Gras Parade, Alexandria, LA

USFS employees along with Smokey Bear shared wildfire prevention awareness with the 2015 Children's Mardi Gras Parade crowd in Alexandria, LA. The parade attracts tens of thousands of people from all over central Louisiana and neighboring states. The USFS float had families from the Kisatchie National Forest, the Southern Research Station and State & Private Forestry aboard to pass out Smokey Bear items, a favorite for the parade attendees.

US Forest Service employees and families with their float at the 2015 Children's Mardi Gras parade in Alexandria, LA.

Georgia Science & Engineering Fair

Mary Williams (SRS 4552, Athens GA) served a judge at the 67th Georgia Science & Engineering Fair on March 27, 2015. Middle and High School Students from all across the state enter this competition every year, set up exhibits, answer questions and discuss their work.

Participants in the 67th Georgia Science and Engineering Fair.

Technology Transfer

Publications (in print/press):

1. Chen, Y., Ulyshen, M.D., Poland, T. in press. **Abundance of volatile organic compounds in ash phloem and emerald ash borer larval frass does not attract *Tetrastichus planipennisi* in Y-tube olfactometer**. Insect Science (In Press).
2. Cram M.C. and S.W. Fraedrich. 2015. **Evaluations of inoculations with arbuscular mycorrhizal fungi on eastern redcedar**. Tree Planter's Notes (In Press).
3. Dodds, K., J. Allison, D. Miller, R. Hanavan, and J. Sweeney. 2014. **Considering species richness and rarity when selecting optimal survey traps: Comparisons of semiochemical baited flight intercept traps for Cerambycidae in eastern North America.** Agric. For. Entomol. 17: 36–47.
4. Fraedrich, S. W., T. C Harrington and G. S. Best. 2015. ***Xyleborus glabratus* attacks and systemic infections by *Raffaelea lauricola* associated with dieback of camphortree (*Cinnamomum camphora*) in the southeastern United States.** Forest Pathology 45:60-70.
5. Harrington, T. C., S. McNew, C. Mayers, S. W. Fraedrich and S. Reed. 2014. ***Ambrosiella roeperi* sp. nov. is the mycangial symbiont of the granulate ambrosia beetle, *Xylosandrus crassiusculus*.** Mycologia 106: 835–845.
6. Miller, D.R., K.J. Dodds, E.R. Hoebeke, T.M. Poland and E.A. Willhite. 2015. **Variation in the effects of conophthorin on catches of ambrosia beetles to ethanol-baited traps.** J. Econ. Entomol. 108: 183–191.

Submitted Publications (in review):

1. Cameron, R. S., J.L. Hanula, S.W. Fraedrich, and C. Bates. 2015. **Progression and Impact of Laurel Wilt Disease within Redbay and Sassafras Populations in Southeast Georgia.** SRS Station Research Paper (In Review).
2. Fraedrich, S. W., A. E. Mayfield, and J. L. Hanula and T. C. Harrington. 2015. **The interactions of *Xyleborus glabratus* and *Raffaelea lauricola* with species in the family Lauraceae in the southeastern United States.** Proceedings of Workshop on Xyleborus glabratus and Euwallacea spp. Xalapa, Mexico. November 2 - 8, 2014. (In Review).
3. Miller, D.R., C.M. Crowe, K.J. Dodds, L.D. Galligan, P. de Groot, E.R. Hoebeke, A.E. Mayfield III, T.M. Poland, K.F. Raffa and J. D. Sweeney. **Ipsenol, ipsdienol, ethanol and α-pinene: Trap lure blend for Cerambycidae and Buprestidae (Coleoptera) in pine forests of eastern North America.** J. Econ. Entomol. Submitted 31 January 2015.

4. Powers, Z., A. Mayfield, J. Frampton, and R. Jetton. **Comparison of suspended branch and direct infestation techniques for artificially infesting hemlock seedlings with hemlock woolly adelgid for resistance screening.** Forests (In Review).

Presentations and Lectures:

1. Fraedrich, S. W., A.E. Mayfield, and J.L. Hanula and T.C. Harrington. 2014. **The interactions of *Xyleborus glabratus* and *Raffaelea lauricola* with species in the family Lauraceae in the southeastern United States.** Workshop on *Xyleborus glabratus* and *Euwallacea* spp. Xalapa, Mexico. November 2 - 8, 2014.
2. Fraedrich, S. W., G. S. Best and C. Bates. 2015. **Laurel Wilt: An Introduced Asian Beetle and Its Fungal Symbiont Are Changing Maritime Forests in the Southeastern United States**. Third Annual Jekyll Island Green Screen Event. Jekyll Island, GA. Feb 21, 2015 (Poster).
3. Hanula, J.L. 2015. **Removal of Chinese privet and its effect on plants and pollinators 5 years later.** Class lecture for Univ. of Ga. Hort3333S, Conserving Native Plants. James Affolter, Instructor. March 17, 2015.
4. Hanula, J.L. 2015. **Seed and Cone Insects of the Southeastern U.S.** Class Lecture for Univ. of Ga. FORS 4210 Forest Health Protection, Kamal Gandhi, Instructor. February 9, 2015.
5. Harrington, T.C., S.W. Fraedrich, 2014. **The *Raffaelea lauricola/Xyleborus glabratus* symbiosis and the threat of laurel wilt to Asian and American Lauraceae**. Workshop on *Xyleborus glabratus* and *Euwallacea* spp. Xalapa, Mexico. November 2 - 8, 2014.
6. Jetton, R.M., A.R. Tait, and A.E. Mayfield. 2015. **Silvicultural and Integrated Management Strategies for Restoring Hemlock to Degraded Southern Appalachian Cove Forests.** 26th USDA Interagency Research Forum on Invasive Species, January 2015, Annapolis, MD (Poster).
7. Lucardi, R.D. **Multi-Agency Cooperation Protects our Natural Resources: It's a Win-Win Opportunity.** Savannah Pest Risk Management Meeting. U.S. Customs and Border Protection-Operations Center, Dept. of Homeland Security, in cooperation with USDA-APHIS-PPQ. February 2015, Savannah, GA.
8. Lucardi, R.D. 2015. **Invited Panelist**, Southeastern Ecology & Evolution Conference (SEEC) 2015, University of Georgia, Athens, GA. March 2015.
9. Lucardi, R.D. and G.N. Ervin. 2015. **Ecology of cogongrass in the southeastern US: Where are the gaps in our understanding?** 26th USDA Interagency Research Forum on Invasive Species, January 2015, Annapolis, MD (Poster).
10. Miller, D.R., J.D. Allison, C.M. Crowe, D. Dickinson, A. Eglitis, R.W. Hofstetter, A.S. Munson, T.M. Poland, L.S. Reid, B.E. Steed and J.D. Sweeney. 2015**. Ipsenol, monochamol and α-pinene: Trap lure blend for *Monochamus* species (Cerambycidae) in Canada and USA**. 26th USDA Interagency Research Forum on Invasive Species, Annapolis MD. January 2015.
11. Miller, D.R., C.M. Crowe, M.D. Ginzel, T.M. Poland, C.M. Ranger, P.B. Schultz and E.A. Willhite. **Effect of ethanol and conophthorin dose on attraction of ambrosia beetles.** 26th USDA Interagency Research Forum on Invasive Species, Annapolis MD. January 2015.
12. Miniat, C. S. Brantley, D. Zeitlow, A.E. Mayfield, R.M. Jetton. **Physiological Responses of Eastern Hemlock (*Tsuga canadensis*) to Biological Control and Silvicultural Release: Implications for Hemlock Restoration**. Fifth Interagency Conference on Research in the Watersheds, 2-5 Mar 2015, North Charleston, SC (Poster).
13. Schulz, A.N., R.D. Lucardi, M.M. Cram, K.J.K. Gandhi. 2015. **What's Happening to the White Pine? An Assessment of the Eastern White Pine-Scale Insect-Canker Complex in the Southern Appalachian Mountains.** Southeastern Ecology & Evolution Conference (SEEC) 2015, University of Georgia, March 2015. Athens, GA (Poster).

14. Schulz, A., C. Asaro, D.R. Coyle, M. Cram, R.D. Lucardi, A.M. Mech, K.J.K. Gandhi. 2015. **Determining the distribution of *Matsucoccus macrocicatrices* in the White Pine Forests of the Southern Appalachian Mountains.** Warnell Graduate Student Symposium, University of Georgia. February 2015. Athens, GA.

15. Schulz, A., C. Asaro, D.R. Coyle, M. Cram, R.D. Lucardi, A.M. Mech, K.J.K. Gandhi. 2015. **What's bugging the White Pine? An assessment of the White Pine-scale insect-canker complex in the Southern Appalachian Mountains.** Warnell Graduate Student Symposium, University of Georgia. February 2015. Athens, GA.

16. Schulz, A., C. Asaro, D.R. Coyle, M. Cram, R.D. Lucardi, A.M. Mech, K.J.K. Gandhi. 2015. **Interactions between Eastern White Pine (*Pinus strobus*) and the recently discovered scale insect-pathogen complex in the Southern Appalachians.** 26th USDA Interagency Research Forum on Invasive Species. January 2015. Annapolis, MD (Poster).

17. Whitney, T.D., K.J.K. Gandhi, R.D. Lucardi. 2015. **Genetic characterization of the coevolution between *Pinus strobus* and an associated insect herbivore.** Warnell Graduate Student Symposium, University of Georgia. February 2015, Athens, GA.

18. Whitney, T.D., K.J.K. Gandhi, R.D. Lucardi. 2015. **Genetic structure and potential coevolution between Pinus strobus and an insect Herbivore.** Southeastern Ecology & Evolution Conference (SEEC), University of Georgia, March 2015. Athens, GA (Poster).