

Project Leader's Report

Center for Forest Disturbance Science

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U.S. Forest Service - Southern Research Station - RWU 4156 - 320 Green St. Athens, GA - <http://www.forestdisturbance.net>

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Innovation

Joe O'Brien gave an invited presentation on the dynamics of fire, fuel and forest structure at the workshop Taller Sobre Manejo Integral Del Fuego En La Ecoregión Bosques De Pino-Encino De Mesoamérica (Workshop on Integrated Fire Management in the Pine-Oak Forest Ecoregion of Mesoamerica) that was held in Casa Kolping, Tuxtla Gutiérrez, Chiapas, México. The workshop was attended by about 50 participants coming from Mexico, Honduras, El Salvador, Guatemala, Belize, Nicaragua and the US. The participants were protected area managers, NGO and governmental resource management decision makers and researchers. The group worked together to develop action plans for furthering the implementation of integrated fire management in each country and identify research needs. As a result of the workshop Joe was invited to return to Honduras by the National Forest Advisor and the faculty of the national forestry school at Siguatepeque to give a seminar to students, managers of Honduran National Forests, and private landholders and discuss research collaborations on the links among forest structure, fire and fuel dynamics.



Joe at the "Taller Pino-Encino" (workshop) in Tuxtla Gutierrez, Mexico.

O'Brien also met with local campesino fire managers who had been trained at previous workshops and use prescribed and controlled burns to manage their plots of *Pinus oocarpa* within the La Sepultura Biosphere Reserve. La Sepultura Biosphere Reserve is in the Sierra Madre range in Chiapas and covers 413,253 acres and protects a diversity of forests from tropical dry forest, mountain pine-oaks to cloud forest. The reserve covers ecosystems with a range of integrated fire management needs. Unlike the US, most of Mexico's protected natural areas, including La Sepultura encompass a combination of private property and communal lands held in trust for peasant farmers called "ejidos." People are an integral part of the landscape in these reserves. While there are restrictions on land use and land conversion, reserve personnel work with local communities to develop compatible uses that both protect the resource and improve better living conditions for the "ejidaterios" who make a living in the reserve.



Pinus oocarpa at the forest "La sepultura biosphere reserve"

Joe visited an ejido where the ejidaterios use fire to reduce fuel loads, improve forage, control ticks and chiggers, among other reasons. The area has highly seasonal rainfall and is prone to extremely windy conditions with 50 mph gusts common. The typical prescribed fire was about 10 acres and usually lit in the early wet season either in the late afternoon or early evening when humidity is high and winds calm. The ejidaterios discussed their burning strategy and how they avoid igniting fires during conditions that could cause an escape or severe fire, demonstrating their skill and keen understanding of factors that influence fire behavior.



Don Miguel Pinacho, community leader and fire user at La Sepultura.



🌲 Scott Goodrick presented a seminar to the University of Georgia, Department of Geography on the Atmospheric Sciences Team research efforts associated with the Southern High Resolution Modeling Consortium. The presentation highlighted ongoing research conducted by Scott as well as the efforts of Yongqiang Liu and Gary Achtemeier in areas of smoke management, numerical modeling and climate change.

🌲 Gary Achtemeier gave an invited talk on “Modeling Superfog: A Case Study of the I-4 Disaster of 9 January 2008” in Melbourne, Florida at the request of Dean VanderBleek, Fire Manager with Brevard County Parks and Recreation. Approximately 25 people from a number of different agencies in central Florida attended the meeting. The 30-minute presentation was followed by another 30 minutes of question and answer.

🌲 Mac Callaham gave a seminar via webcast to The Stewardship Network. The talk was entitled “The History and Future of Soils in Restoration Ecology.” The Stewardship Network is a non-profit conservation, preservation, and restoration group headquartered in Ann Arbor, Michigan. Mac gave a half-hour presentation, and then fielded questions from the audience via the “chat” function on the webcast platform. Feedback has been great, and Mac thoroughly enjoyed the experience of his first webcast! For more on The Stewardship Network, or to browse the archived webcasts go to: www.stewardshipnetwork.org.

🌲 Tom Waldrop presented the brown bag seminar to the unit on “Fuel Classification for the Southern Appalachian Mountains Using Hyperspectral Image Analysis and Landscape Ecosystem Classification.” The work was originally funded by the Joint Fire Science Program and involved extensive surveys of fuels throughout the southern Appalachians. Since the grant ended, the extensive datasets developed for the project have been used to test the accuracy of FIA fuels measurements, examine fuel production and decomposition in the mountains, and to develop LiDAR-based models of slope position and mountain laurel abundance. Several scientists in the unit are interested in us-

🌲 Gary Achtemeier is working with individuals from a number of organizations to install, set up and make preliminary runs of the PB-Piedmont smoke modeling software. Recent contacts have included Jason Demas, Assistant Fire Management Officer, US Forest Service, Savannah River; John McGuire of Westervelt Ecological Services; Timothy Kolnik, prescribed fire manager in South Carolina; John Pendergrast of the National Weather Service office in Melbourne, Florida; and Robert S. Duncan, DeLand District Commander, Florida Highway Patrol, has requested copies of all papers on superfog.

🌲 John Stanturf has been invited to give a keynote talk “Contemporary forest restoration: socially acceptable and sustainable solutions” at the EU-IUFRO Conference on Innovation and New Horizons in Tree Nursery Stock Production and Forest Restoration - From Research to Business, to be held in March in Rome, Italy. Expenses will be paid by the conference organizers.

Connections

🌲 Members of the Invasive Species and Restoration Team (Mac Callaham, Kim Crider, and David Combs) met with staff from the Sumter National Forest in Whitmire, South Carolina to discuss the possibility of new collaborative projects on the Enoree Ranger District of the Sumter. These studies would examine the formation and fate of charcoal and soot (black carbon) in prescribed fire management on the Forest. Of particular interest is how black carbon is exported (or not) from watersheds via erosion and sedimentation processes following prescribed burning.

🌲 Ken Outcalt attended a meeting with staff of the Chattahoochee and Oconee National Forest to provide input for Landscape Scale Assessment of the Oconee. The purpose of meeting was to discuss current state of the Oconee National Forest and look for opportunities for future management activities that will result in a healthy, resilient vegetation.

🌲 Five organized groups visited the Brender/Hitchiti this month including a Wilderness Society group from Macon, Georgia; a group from the Bush Arboretum; and three family groups from Franklin, North Carolina, Macon and McDonough, Georgia. A group of 150 eight-grade students from Gainesville, Georgia will visit in March.

🌲 Release work in planted longleaf pine stands was completed and the Wild Turkey Federation is completing planting longleaf on the balance of sites that were lost to the Southern Pine Beetle. Fire lines have been installed in preparation for about 1000 acres of prescribed burning in February.

🌲 A total of 25 people came by the office for information and a total of 134 people signed the register to walk the Hitchiti Interpretive Trail.

Partnerships

🌲 Smoke plume measurements of two prescribed burns were conducted at Ft. Benning Army Base near Columbus, Georgia in mid-January by a team consisting of Scott Goodrick, Yong Liu, Ken Forbus, and David Combs. The measurements are part of the ongoing research effort funded by the Department of Defense and the Joint Fire Sciences Program. A team from the University of Georgia collected ground smoke gas and particle concentrations at the same time. Plume rise was successfully measured for the first time with a ceilometer. A ceilometer is a device that uses a laser or other light source to determine the height of a cloud base. Ceilometers can also be used to measure the aerosol concentration within the atmosphere. Similar measurements of plume rise for more burns will be conducted this winter and spring at Ft. Benning and other locations.



Unit staff David Combs, Yong Liu, and Ken Forbus proudly display the ceilometer at Ft. Benning, Georgia

🌲 Dean VanderBleek, Fire Manager with the Brevard County Parks and Recreation, EEL Program is working with Gary Achtemeier to provide ground-truth data for validating PB-Coastal Plain.

🌲 Brian Sturdevant, Research Ecologist with the North Central Station, is collaborating with Gary Achtemeier on a re-submittal of a proposal to the Agriculture and Food Research Initiative (AFRI) on spruce budworm dispersal. AFRI, formerly the National Research Initiative, was created as part of the recent Farm Bill.

Science Highlight

For several years, research scientists at the USDA Forest Service Southern Research Station have conducted an operational-scale study in cooperation with managers at the Florida Division of Forestry, in north central Florida and the northwestern panhandle of Florida. This controlled experiment is assessing the comparative effects of applying (1) single-tree selection, (2) group selection, (3) irregular shelterwood and (4) uniform shelterwood stand reproduction methods on longleaf pine forests growing in two contrasting environments: (a) flatwoods at the Goethe State Forest and (b) subxeric sandhill uplands at the Blackwater River State Forest. Researchers will present their initial findings at two workshops one site in Florida (April 14 and 16) concerning the manner in which each method has influenced (1) stand structure, (2) overstory tree growth, (3) understory dynamics and (4) pine regeneration.



Selection harvest stand Blackwater showing seedling ready to take place of harvested tree

Discussion will also provide information concerning the study background, objectives and methods. The newly-developed Proportional-B (Pro-B) Selection Silviculture Method, which was successfully applied at these sites and others, will be highlighted as an easy-to-apply and highly-effective approach for implementing uneven-aged management in longleaf pine and other forest types. Cooperating forest managers will be encouraged to share their operational experiences with application of these methods and discuss their usefulness with fellow foresters and private landowners. Although there is no fee for these workshops, to assist us in planning, please indicate your intention to attend one or both, by contacting Ken Outcalt (koutcalt@fs.fed.us) or Dale Brockway (dbrockway@fs.fed.us).



Shelterwood stand on Blackwater



Shelterwood cut just after harvest on Goethe State Forest



Control stand that was not harvested, Goethe State Forest



Harvest operation on Goethe November 2006

All About Us

🌲 Were you wondering about the snowy pictures in last month's PLR? They came as Christmas cards from several cooperators (from Colorado, Oregon, and Iran).

🌲 Staff gathered in early January for a farewell luncheon for Rick Reitz who had served as a Technology Transfer Specialist with the unit since the summer of 2003. Rick came to the unit from Albuquerque, NM where he worked with Region 3 Fire and Aviation Management. He will become the new Ranger of the Globe Ranger District on the Tonto National Forest in Globe, New Mexico. In addition to his duties as a TT Specialist in Athens, Rick maintained an active interest in the Incident Command System and was deployed on a number of fires and hurricanes. He also worked on a Ph.D. program at the University of Georgia where his research dealt with the impacts of fuel reduction treatments on mycorrhizal abundance in the southern Appalachian Mountains. His experiences in research helped to broaden his perspective which will become valuable in his new job. Congratulations and good luck to Rick Reitz!

What's Up

Several Forest Service officials have taken up acting positions in the Department of Agriculture under the new administration. According to Secretary Vilsack's office, Ann Bartuska is Acting Deputy Under Secretary for Natural Resources and Environment (NRE) and Hank Kashdan is Acting Deputy Under Secretary for Forest Service, NRE. Doug Crandall is Acting Deputy Assistant Secretary for Congressional Relations. Bartuska is in the position formerly held by Mark Rey.



Ann Bartuska, Deputy Chief Research and Development, US Forest Service



Hank Kashdan, Deputy Chief Business Operations, US Forest Service



Doug Crandall (Forest Service Office of Legislative Affairs), Randi Spivak (American Lands) and Mark Rey (former Undersecretary of Natural Resources and Environment)

John Kelly, Assistant Director for Research at the Southern Research Station, announced his intention to retire effective March 31, 2009. Outreach for a new Assistant Director for Science Delivery (vice-Carol Whitlock) is now open; in the meantime, several detailers will fill in until the position is filled permanently.



John Kelly, Assistant Director, Forest Values, Uses, and Policies

Jim Shepard at Mississippi State University has a new job in which he will wear two hats: Associate Director, Research for the Forest and Wildlife Research Center and Associate Director of the Water Resources Research Institute for Mississippi. Jim has been head of the Department of Forestry for the last five years and formerly was with NCASI. He was one of the original forces behind establishment of the Sharkey Restoration Research and Demonstration Site in Mississippi that was described in a recent *Journal of Forestry* article (Gardiner et al. 2008).



James Shepard, Mississippi State University

A Post Fire Vegetation Conditions website has been launched. The website provides an initial description of vegetative conditions following catastrophic fire events. There has been an increasing need to show what effects catastrophic wildfires have on the vegetated landscape..

The Pacific Southwest Region, along with the Remote Sensing Application Center, first developed the process for use in California's national forests. Now it is available for all regions. The fires depicted on the website are limited to large catastrophic fires that burned more than 1,000 acres of forested lands. This website offers an initial description of post-fire vegetative conditions using the Rapid Assessment of Vegetation Condition after Wildfire (RAVG) process. RAVG products are generated for National Forest System lands (including wilderness) to provide information that can assist post-fire vegetation management planning designed to address a number of management objectives. The primary benefit is cost-effective, efficient, and precise identification of potential resource concern areas following wildfires. The website is located at: <http://www.fs.fed.us/postfirevegcondition/index.php>

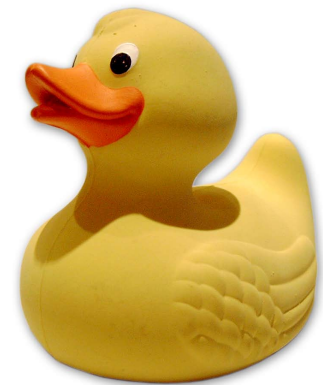
The Timber and Forestry programme of the United Nations Economic Commission for Europe (UNECE) and the Food and Agriculture Organization of the United Nations (FAO) announced the release of a new web-based resource tool designed by the international community to enable researchers, policymakers, practitioners and the general public to access data on Europe's forests. The database is a comprehensive research tool based on the report *State of Europe's Forests 2007*, and includes data which have so far not been published. This is the first time that such a comprehensive set of information pertinent to sustainable forest management and forest resources assessment in Europe is being published via an online data management system. It makes information available for 27 quantitative indicators, structured by six criteria for sustainable forest management endorsed by the Ministerial Conference on the Protection of Forests in Europe. In addition to characteristics of European forests and forestry data in general, the user also has access to information on the balance of carbon in forest ecosystems, forest health condition and status of forest biodiversity. Aspects of production, including wood and non-wood products and services, are presented along with information on protected forest areas. The database also provides information on social and economic aspects of the forestry sector. The database is available at: <http://w3.unece.org/pxweb/Dialog/>

🌲 A new initiative, Advancing Forest Health Through Biotechnology, is led by a steering committee comprised of representatives from the US Forest Service, The US Endowment for Forestry and Communities (the Endowment), Duke Energy, The Nature Conservancy and Environmental Defense Fund. Recently 35 interested stakeholders met to develop a plan that will test the potential application of forest biotechnology as a viable tool in protecting and restoring our nation's forests from the ravages of pests and disease. The work is founded on the understanding that science cannot be addressed in a vacuum but rather must be developed in concert with societal understanding and needs, and the regulatory processes designed to protect them. To incorporate that ideal, there will be three separate work groups to address regulatory issues, societal and environmental implications, and scientific steps – all working in concert to address the issue as a whole. Steering Committee Chairman Carlton Owen, President of the Endowment said, "We have come to the point where we simply don't have the luxury of time that affords using only 20th Century tools to deal with 21st Century challenges. New threats to forest health, exacerbated by climate change, and the rapid nature of their expansion, call for new tools in the fight. Forest biotechnology, developed and deployed under the right circumstances, may offer opportunities to protect forest health not practical with any other technology or response." The initiative plans to build on the extensive research already accomplished on the American chestnut by the American Chestnut Foundation and others as a model system for how biotechnology can potentially protect trees, and restore species devastated by disease. The near-term goal is to safely and effectively develop an American chestnut that is resistant to the chestnut blight and root rot, and which can be safely restored to our forests. With assistance from experienced coordinating organizations, the committees have a three-year plan to bring resources together in a way unprecedented in addressing forest health challenges. Duke Energy, the first corporate sponsor, has joined the Forest Service and the Endowment in pledges that total \$5.5 million toward the estimated \$10 million necessary to achieve success. (Source: Institute Forest Biotechnology)

🌲 The International Renewable Energy Agency (IRENA) was launched this month at a Founding Conference held in Bonn, Germany. Primarily led by Germany, Denmark and Spain, the conference attracted over 120 government delegations, and resulted in a total of 75 nations, including both developing and industrialized countries, signing the Agency's founding treaty; the United States has not yet signed. Germany's Federal Environment Minister, Sigmar Gabriel, stated that now was the perfect time for IRENA's launch. "Climate change and the financial crisis demand a clear focus on future oriented and sustainable technologies such as renewable energies," he said. The role of IRENA will be to remove existing barriers for renewable energy development and to "facilitate access to all relevant information including reliable data on the potential of renewable energy, best practices, effective financial mechanisms, and state-of-the-art technological expertise." Hans Jorgen Koch, the Danish Deputy Secretary in the Ministry of Energy and Climate Change, said IRENA is also meant in part to exploit the weaknesses of the International Energy Agency (IEA). "For ten years the IEA has underestimated the competitiveness of renewable energy sources," Koch said. For additional information see: <http://www.irena.org/> (Source: Environmental and Energy Study Institute, Climate Change News)

🌲 NASA will launch the Orbiting Carbon Observatory, a satellite tasked with providing the first complete picture of human and natural carbon dioxide sources as well as their sinks. Of all the carbon released by humans since the beginning of the industrial revolution, about 40 % remains in the atmosphere and 30% is absorbed by the oceans. The absorption of the remaining 30 % of carbon has largely remained a mystery. The satellite is scheduled to launch on February 23. For additional information see: <http://earthobservatory.nasa.gov/Newsroom/view.php?id=36797>

🌲 There are apparently many different ways to study climate change, including employing everyday devices found in a bathroom. For example, NASA used 90 rubber ducks, which it placed under the ice in the Ilulissat Fjord in Greenland. But the flow has been so strong that the ducks have now disappeared. "We haven't yet heard from them," said Alberto Behar, the project's research leader, in an interview with the BBC. According to Norwegian newspaper Dagbladet, every duck is marked with the words "reward" and "scientific experiment" and with a mailing address. But no one has reported any duck sightings yet. The yellow ducks were also fitted with GPS transmitters, but that has not helped to find them either. (Source: January Newsletter, US Embassy, Denmark)



High-tech climate change measurement device cleverly disguised as a rubber ducky.

JOURNAL ARTICLES AND BOOK CHAPTERS

Boerner, R.E.J.; Coates, A.T.; Yaussy, D.A.; **Waldrop, T.A.** 2008. Assessing ecosystem restoration alternatives in eastern deciduous forests: the view from belowground. *Restoration Ecology* 16(3): 425-434. (Citation update, listed in FY 2008)

*Boerner, R.E.J.; Huang, J.; Hart, S.C. 2009. Impacts of fire and fire surrogate treatments on ecosystem nitrogen storage patterns: similarities and differences between forests of eastern and western North America. *Canadian Journal of Forest Research* 38: 3056-3070.

Callaham, M.A., Jr., L. Heneghan, C.C. Rhoades (Guest Editors). 2008. Special Section: Soil Ecology and Restoration Ecology. *Restoration Ecology* 16:604-712.

Callaham, M.A., Jr., C.C. Rhoades, and L. Heneghan. 2008. A striking profile: Soil ecological knowledge in restoration management and science. *Restoration Ecology* 16:604-607.

Gardiner, Emile S., **Stanturf, John A.**, Leininger, T.D., Hamel, P.B., Dorris, L.C., Portwood, C.J., and Shepard, J.P. 2008. Establishing a research and demonstration area initiated by managers: the Sharkey Restoration Research and Demonstration Site. *Journal of Forestry* 106:363-369.

Heneghan, L., S.P. Miller, S. Baer, **M.A. Callaham, Jr.**, J. Montgomery, M. Pavao-Zuckerman, C.C. Rhoades, S. Richardson, 2008. Integrating soil ecological knowledge into restoration management. *Restoration Ecology* 16:608-617.

Hendrix, P.F., **M.A. Callaham, Jr.**, J.M. Drake, C.-Y. Huang, S.W. James, B.A. Snyder, and W.X. Zhang. 2008. Pandora's box contained bait: The global problem of introduced earthworms. *Annual Reviews in Ecology, Evolution, and Systematics*. 39:593-613.

Jimenez, E., Hussaini, M.Y. and **Goodrick, S.** 2008. Quantifying parametric uncertainty in the Rothermel model. *International Journal of Wildland Fire* 17(5): 638-649. doi: 10.1007/WF07070

Lockhart, B.R.; Gardiner, E.; Leininger, T.; **Stanturf, J.** 2008. A stand-development approach to oak afforestation in the Lower Mississippi Alluvial Valley. *Southern Journal of Applied Forestry* 32: 120-129.

*Mitra, O.; **Callaham, M.A., Jr.**; Smith, M.L.; Yack, J.E. 2008. Grunting for worms: reactions of *Diplocardia* to seismic vibrations. *Biology Letters* 5:16-19 (updated citation)

Peterson, C.J.; Leach, A.D. 2008. Salvage logging after windthrow alters microsite diversity, abundance and environment, but not vegetation. *Forestry* 81 (3): 361-376. (Citation update, listed in FY 2008)

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O'Brien, J.J.; Hiers, J.K., **Callaham, M.A.** Jr.; Mitchell, R.J.; Jack S. 2008. Interactions among overstory structure, seedling life history traits and fire in frequently burned neotropical pine forests. *Ambio* 37: 542-547.

Qu, John J.; Hao, Xianjun; **Liu, Yongqiang**; Riebau, Allen R.; Yi, Haoruo; Qin, Xianlin. 2008. Remote sensing applications of wildland fire and air quality in China. In Bytnerowicz, Andrzej; Arbaugh, Michael J.; Riebau Allen R.; Andersen, Christian (Editors), *Wild Land Fires and Air Pollution*, Vol. 8, *Developments in Environmental Science*, pp. 277-288. The Netherlands: Elsevier.

*Wang W.; Qu, J.J.; Hao, X.; Liu, Y. 2009. Analysis of the moderate resolution imaging spectroradiometer contextual algorithm for small fire detection, *Journal of Applied Remote Sensing* Vol.3. DOI: 10.1117/1.3078426

Zhang, Chi, Hanqin Tian, Shufen Pan, Mingliang Liu, Graeme Lockaby, Erik B. Schilling, and **John Stanturf**. 2008. Effects of forest regrowth and urbanization on ecosystem carbon storage in a rural-urban gradient in the Southeastern United States. *Ecosystems* 11: 1211-1222. DOI: 10.1007/s10021-006-0126-x

Zhang, D. and **Stanturf, J.A.** 2008. Forest Plantations. In Sven Erik Jørgensen and Brian D. Fath (Editors-in-Chief), *Ecosystems*. Vol. [2] of *Encyclopedia of Ecology*, 5 vols. pp. 1673-1680. Oxford: Elsevier.

PUBLISHED ABSTRACTS

***Achtemeier, G.L.** 2009. Modeling superfog: A case study of the I-4 disaster of 9 January 2008. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (oral)

***Achtemeier, G.L.** 2009. On the relevance of the ventilation index as a tool for regulating prescribed fire. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (oral)

***Achtemeier, G.L.** 2009. Field validation of PB-Piedmont. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (oral)

***Achtemeier, G.L.** and **Liu, Y.** 2009. Smoke transport and dispersion from prescribed burns: complications posed by mountainous terrain. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (poster)

Callaham, M.A., Jr., S.C. Rostkowski, Jr., E.S. Gardiner, **J.A. Stanturf**, and B.A. Snyder. 2008. Litter-dwelling arthropods in a bottomland hardwood restoration experiment in the Lower Mississippi Alluvial Valley, USA. Poster presentation at 15th International Colloquium on Soil Zoology and Ecology, August 2008, Curitiba, Brazil.

Callaham, M.A., Jr., J.J. O'Brien, P.F. Hendrix, D.L. Camp, and S.R. Bennett. 2008. Carbon and nitrogen dynamics in soils with native North American and introduced European earthworms determined with stable isotopes. Poster presentation at 15th International Colloquium on Soil Zoology and Ecology, August 2008, Curitiba, Brazil.

Callaham, M.A., Jr., K.R. Butt and C.N. Lowe. 2008. Stable isotope evidence for marine-derived avian inputs of nitrogen into detrital foodwebs on the Isle of Rum, Scotland, UK. Poster presentation at 15th International Colloquium on Soil Zoology and Ecology, August 2008, Curitiba, Brazil.

***Carlson, J.D. and Achtemeier, G.L.** 2009. Field validation of PB-Piedmont, a mesoscale smoke dispersion model for application to Oklahoma landscapes. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (oral)

Crider, K.K. 2008. Direct and indirect effects of a native predator on weed biological control. Poster presentation at Ecological Society of America annual meetings, August, 2008, Milwaukee, WI.

Hanson, P.J.; McFarlane, K.; Trumbore, S.; Guilderson, T.; Torn, M.S.; Matamala, R.; Jastrow, J.D.; **Callaham, M.A.**; Parton, W.J., Jr. 2008. Quantifying organic and mineral soil carbon turnover along climate gradients: The EBIS-AmeriFlux Project. Poster presentation at the Annual AmeriFlux Science Meeting, Boulder, CO, October, 2008.

Hiers, J.K.; Starr, G.; **Callaham, M.A., Jr.; J.J. O'Brien, J.J.**; Mitchell, R.J. 2008. The silvics of sequestration in frequently burned longleaf pine forests. Oral presentation delivered at the Longleaf Alliance annual meetings, Destin, FL, October, 2008.

***Liu, Y.; Achtemeier, G.; Goodrick, S.L.** 2009. Sensitivity and evaluation of smoke plume rise schemes for regional air quality simulation. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (poster)

***Liu, Y.; Goodrick, S.L.; Achtemeier, G.**; Jackson, W.A. 2009. SHRMC-4S as a fire and air quality management tool for prescribed burning. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (poster)

***Liu, Y.; Goodrick, S.L.; Achtemeier, G.** 2009. A smoke plume pattern of 2007 Georgia/Florida wildfires related to atmospheric cyclonic circulation over Atlantic Ocean. 24th Tall Timbers Fire Ecology Conference, Tallahassee, FL, January 12-15, 2009. (poster)

Lockhart, Brian Roy; Gardiner, Emile S.; Leininger, Theodor D.; **Stanturf, John A** 2008. A conceptual model for developing mixed-species plantations in the Lower Mississippi Alluvial Valley. In Lockhart, Brian Roy, Gardiner, Emile S., Dey, Daniel C. (eds.). 2008. Tenth Workshop on Seedling Physiology and Growth Problems in Oak Plantings; 2007 October 16-17; Jackson, MS. General Technical Report NRS-P-32. Newtown Square, PA: US Department of Agriculture, Forest Service, Northern Research Station. P. 6.

McGee, J.D., N.A. Jansen, J.K. Hiers, **M.A. Callaham, Jr.**, R.J. Mitchell, and M.P. Greene. 2008. Recalcitrant carbon pools in burned and unburned longleaf pine systems. Poster presentation at Ecological Society of America annual meetings, August, 2008, Milwaukee, WI.

Snyder, B.A., **M.A. Callaham, Jr.**, C.N. Lowe, S.C. Rostkowski, Jr., and P.F. Hendrix. 2008. Interactions between the invasive earthworm *Amyntas agrestis* (Megascolecidae) and the North American millipede *Sigmoria ainsliei* (Xystodesmidae). Oral presentation (delivered by Callaham) at 15th International Colloquium on Soil Zoology and Ecology, August 2008, Curitiba, Brazil.

Stanturf, J.A. 2008. Silviculture and ungulates: Implications of restoration and climate change. Expert Workshop on New Ways to Optimize the Joint Management of Ungulates, Forests, and Forest Landscapes, Løvenholm Castle, Denmark; Forest and Landscape-KVL.

Calendar

2009

Mar 10-12: Climate Change: Global Risks, Challenges and Decisions; Copenhagen, Denmark; <http://www.climatecongress.ku.dk>

***Mar 12-14:** Innovation and New Horizons in Tree Nursery Stock Production and Forest Restoration - From Research to Business, Rome, Italy; <http://www.preforest.eu> or <http://www.vivaitorsanlorenzo.it>

***Apr 1-4:** Association of Southeastern Biologists annual meeting, Birmingham, Alabama

***Apr 14:** Workshop on "Comparative Analysis of Stand Reproduction Methods for Longleaf Pine Forests," Goethe State Forest, Dunnellon, Florida

***Apr 16:** Workshop on "Comparative Analysis of Stand Reproduction Methods for Longleaf Pine Forests," Blackwater River State Forest, Milton, Florida

Apr 12-16: Annual conference of U.S. Regional Association, International Association for Landscape Ecology (US-IALE), "Coupling Humans and Complex Ecological Landscapes" Snowbird, Utah; <http://www.usiale.org/snowbird2009>

Apr 16-18: International conference "Forestry, Wildlife and Wood Sciences for Society Development," 90th anniversary of the Forestry Faculty in Prague, Czech University of Life Sciences, Prague; <http://fww2009.krajinari.com/>

May 14-15: Conference on Ecology and Management of High-Elevation Forests in the Central and Southern Appalachians; Snowshoe Mountain Resort, Slatyfork, WV http://www.forestry.caf.wvu.edu/wvu_divforestry/

***May 31-Jun 9:** 2nd International Summit on Hurricanes and Climate Change, Corfu, Greece; <http://www.aegeanconferences.org/>

Jun 10-11: Carbon in Northern Forests: Integration of Research and Management Traverse City, MI <http://forest.mtu.edu/cinff/>

***Jun 10-12:** The Conference on the Inland Impacts of Tropical Cyclones, hosted by the Metro Atlanta Chapter of the American Meteorological Society and National Weather Association, Atlanta, Georgia; <http://www.ametsoc.org/chapters/atlanta/iitc.html>

Jun 15-19: National Silviculture Workshop, Integrated Management of Carbon Sequestration and Biomass Utilization Opportunities in a Changing Climate, Boise, Idaho

***Jun 22-26:** 7th North American Forest Ecology Workshop, Logan, Utah; <http://www.nafew2009.org/>

Jun 29-Jul 3: 6th International Symposium on Ecosystem Behavior, BIOGEMON 2009, Helsinki, Finland; <http://www.environment.fi/default.asp?contentid=298085&lan=EN>

Jul 12-15: 12th Biennial Conference of the Soil Ecology Society, with the Society of Nematologists, Burlington, Vermont; <http://www.uvm.edu/conferences/sonsesconference/>

Aug 2-7: Ecological Society of America Annual Meeting, Albuquerque, New Mexico <http://www.esa.org/albuquerque>

Aug 4-8: First World Congress of Environmental History, Copenhagen, Denmark; <http://www.wceh2009.org>

Aug 16-21: 10th International Congress of Ecology (INTECOL), Brisbane, Australia; <http://www.intecol10.org/>

Aug 23-28: Society for Ecological Restoration International World Congress, Perth, Western Australia <http://www.seri2009.com.au>

***Aug 23-29:** World Congress of Agroforestry, Nairobi, Kenya; <http://www.worldagroforestry.org/wca2009/>

Sep 20-25: International Conference on Multipurpose Forest Management: Strategies for Sustainability in a Climate Change Era, Niigata, Japan; <http://www.keiri.fr.a.u-tokyo.ac.jp/multiFM/>

Sep 30-Oct 4: Society American Foresters Annual Meeting, Orlando, Florida

Oct 8-11: First meeting of the Association for Environmental Studies and Sciences, Madison, Wisconsin; <http://aess.info/>

Oct 13-16: 2nd International Conference on Wind Effects on Trees, Meteorological Institute, Albert-Ludwigs University, Freiburg, Germany, <http://www.wind2009.uni-freiburg.de/>

Oct 18-25: World Forestry Congress, Buenos Aires, Argentina; http://www.wfc2009.org/index_1024.html

Nov 1-5: Soil Science Society of America Annual Meeting, Pittsburgh, PA

***Nov 9-13:** Genomics of Forest and Ecosystem Health in the Fagaceae (Beech Family, Research Triangle Park, North Carolina; http://forestbiotech.org/fagaceae_2009.php

Nov 30-Dec 4: 4th International Congress of the Association for Fire Ecology, Savannah, GA <http://www.fireecology.net/congress09/home>

2010

May 25-28: Third EastFIRE Conference, George Mason University, Fairfax, VA

Aug 1-6: Ecological Society of America Annual Meeting, Pittsburgh, Pennsylvania

Aug 23-28: XXIII UFRO World Congress, Seoul, Republic of Korea <http://www.iufro2010.com/>

Aug 1-6: Ecological Society of America Annual Meeting, Pittsburgh, Pennsylvania

Oct 31-Nov 4: Soil Science Society of America Annual Meeting; Long Beach, California

Nov 15-19: VI International Conference on Forest Fire Research; Coimbra, Portugal http://www.fire.uni-freiburg.de/course/meeting/2010/1st_announcement.pdf

Sept. TBD: International Poplar Society Symposium, Orvieto, Italy.

2011 International Year of the Forests

***May 9-13:** International Fire Congress, South Africa; <http://www.wildfire2011.org/>

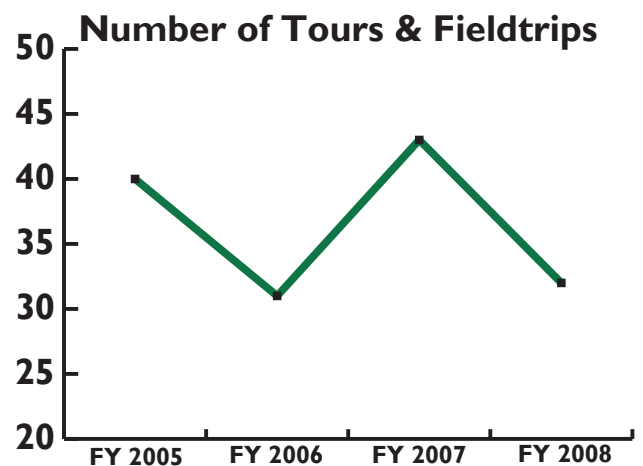
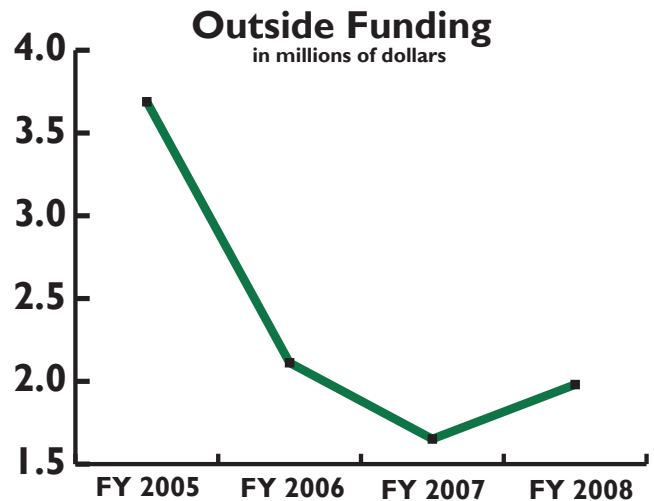
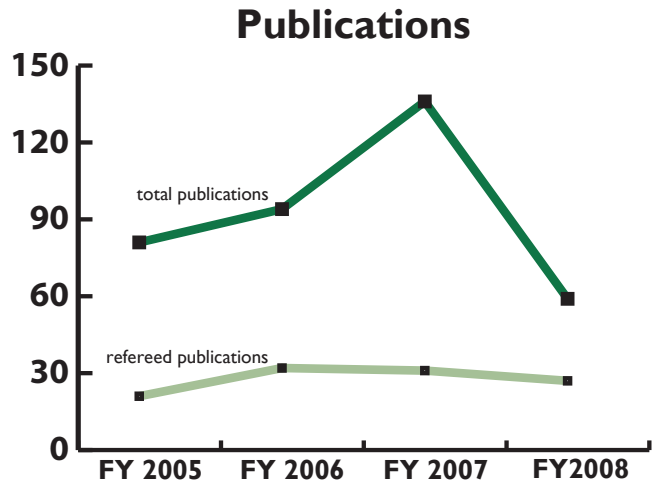
Aug 7-12: Ecological Society of America Annual Meeting, Austin, Texas

Oct 14-20: Soil Science Society of America Annual Meeting; San Antonio, Texas

TBD: IUFRO Wind and Trees Conference, Athens, Georgia; Chris Peterson, University of Georgia to organize

Scoreboard

Category	FY2009
Number of Refereed Journal Publications	15
Number of Non-Refereed Publications (include abstracts)	18
Total Number of Publications	33
Number of Tours	12
Number of Short Courses/Training	5
Number of Invited Presentations to Scientific Organizations	3
Number of Invited Presentations to Lay Organizations	20
Number of Volunteer Presentations to Scientific Organizations	19
Number of Technology Transfer Activities (other than above)	38
Number of Tools Developed	0
Outside Funding	\$80,000



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