



# North Carolina Forest Stewardship News

Spring  
2013

## Northampton County Honors the Morey's

*Story Courtesy of the N.C. Forestry Association*

County Ranger Rodney Black recognized forest landowners Kevin & Rebecca Morey as the Northampton County Forestry Association's Landowner of the Year Award for 2012. Black and his department starting working with the Morey's in 2006 when they were seeking assistance with some pre-commercial thinning. Since then, the Morey's have received forestry advice from the N.C. Forest Service, N.C.



*NCFS County Ranger Rodney Black presented Kevin and Rebecca Morey with the 2012 Northampton County Forestry Association's Landowners of the Year Award*

Wildlife Commission, Natural Resources Conservation Service (NRCS), other forestry landowners in addition to hiring a consulting forester.

The Morey's have written stewardship plans on all of their properties that guide them in the management of their forestlands. They have completed pre-commercial thinning, commercial thinning, constructed wildlife openings, food plots, installed and maintained a network of fire lanes, and completed their first understory burning in February.

# Tree Farm

## About Tree Farm

Tracing its roots back to the 1940's, The American Tree Farm System can lay claim to being the oldest form of certification or recognition system for the practice of growing trees and maintaining sustainable forests in America.

For generations, American landowners and farmers have proudly posted their Tree Farm signs as a way of displaying their stewardship values.

“Our sign has been out there in the woods for some 60 years,” stated Dave Woodmansee with the North Carolina Tree Farm. “Most folks recognize the sign means that the forest is being well-managed.”

North Carolina forest owners have been part of this tradition since the program's inception. However, early in the 1990's, the program went into a hibernation of sorts due to administrative cutbacks. At the time, there were some 2,500 tree farmers were enrolled in the program.

In 2001, Dave Woodmansee, Al Weller and Catherine White successfully resurrected the program under the guidance of Tree Farm Chair, Bob Cooper and several motivated Tree Farmers. After starting from scratch, the North Carolina Tree Farm is approaching the 1,000 Tree Farm mark.

North Carolina boasts 18.6 million acres of forestland, 85 percent of it is privately owned and roughly 64 percent is owned by private, non-industrial landowners.

If you would like to learn more about the North Carolina Tree Farm Program, please contact Leslie McCormick at (919) 917-8646 or [nctreefarm@gmail.com](mailto:nctreefarm@gmail.com).

If you are a forester who would like to be certified as a Tree Farmer, inspector, we would welcome your support.



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## Dwight and Judy Batts Named 2012 North Carolina Tree Farmers Of The Year

The North Carolina Tree Farm Program selected Dwight and Judy Batts of Macclesfield, North Carolina as the 2012 North Carolina Tree Farmers of the Year. The Batts have been Tree Farmers since 2002 and extremely active in the program.

If it were not for his involvement in the program's leadership, Batts probably would have been North Carolina's Tree Farmer of the Year at any point over the past 10 years, but Dwight did not want to be nominated while he was an active member of the state leadership committee.

After earning Tree Farm status, Batts began to volunteer his time and talent to the North Carolina Tree Farm Program. Batts spent two years as Chair-Elect, three years as Chair and three more years as Past-Chair on the North Carolina Tree Farm's Executive Committee.

While he is no longer involved on the state committee, Batts was recruited to serve on the National Tree Farm Woodland Committee and is the advocacy coordinator for the North Carolina Tree Farm program, meaning he coordinates communications to forestland owners on public policy that is or may impact forest landowners in the state.

In addition to his work with the Tree Farm Program, Batts has served on the NCFA's Board of Directors for several years as a landowner/Tree Farm representative. He is also an active member of the Wilson County Forestry Association, having been named Wilson County's Tree Farmer of the Year in 2001.

Batts, who is retired after a successful career with Abbott Laboratories, is a fourth generation farmer/ forestland owner. His Tree Farm totals 350 acres of forestland and is spread over three tracts within a few miles of each other. Dwight and Judy reside on the Batts Farm, which has been in the family for over 100 years and totals 160 acres. The Robbins Nest and Long Path Tree Farms comprise the rest of the forest acreage in the Tree Farm.

Batts takes an active role in the planning and management of his Tree Farm that is home to pines, assorted hardwoods, and a tremendous variety of wildlife and insects. In fact, he and his family may dedicate almost as much time to their wildlife management (bee hives, quail and waterfowl enhancement projects, quality deer management program, etc.) as they do on their trees.



# People

## Wib Owen Retires from the N.C. Forest Service

### *New Leadership announced for NCFS*

Wib Owen ended his 34-year career with the North Carolina Forest Service (NCFS) and North Carolina Wildlife Resources Commission in front of family, friends and co-workers at the North Carolina State Fairgrounds. The luncheon celebrated Wib's achievements over the years and his dedicated service.

North Carolina Commissioner of Agriculture, Steve Troxler, presented Owen with the Order of the Long Leaf Pine, which is one of the state's highest honors. The Order of the Long Leaf Pine is presented to individuals who have a proven record of extraordinary service to the state.

The N.C. Forestry Association (NCFA) and the North Carolina Forest Service have historically pooled their respective resources in terms of staff time, money and elbow grease to achieve favorable results for forestry and forest landowners in our state.

When Wib Owen became the new state forester, he certainly embraced this tradition and worked hand-in-hand with the NCFA on countless projects. The biggest project was the transfer of the Forest Service over to the North Carolina Department of Agriculture, which most agree, has been a great thing for the NCFS and forestry in North Carolina.

Wib has been a true ally over the years and the NCFA looks forward to working with him in the future in his new role as the Executive Director for the Southern Group of State Foresters.



*N.C. State Forester Greg Pate*

On the heels of Wib Owen's retirement, two new leaders have emerged to oversee and direct the NCFS.

Scott Bissette, who has been with the North Carolina Department of Agriculture for the past 16 years, has been chosen to lead the NCFS as Assistant Commissioner. He formerly served as the Agricultural Programs Administrator.

Greg Pate, who was the Deputy State Forester under Owen, has been named North Carolina's new State Forester.



*Wib Owen Receives the Order of The Longleaf Pine from Commissioner Steve Troxler*



*Assistant Commissioner Scott Bissette*

## HOLMAN NAMED NORTH CAROLINA STATE DIRECTOR FOR THE CONSERVATION FUND

CHAPEL HILL, N. C. (Dec. 3, 2012) - The Conservation Fund has named Bill Holman as director of its North Carolina office, effective January 2, 2013. Holman stepped down as director of State Policy at Duke University's Nicholas Institute for Environmental Policy Solutions to join the Fund.



"I have had a passion for conservation since family and Boy Scout camping trips to the Outer Banks, Great Smokies, Blue Ridge Parkway, and Raven Knob," Holman said. "Land and water conservation is critical to North Carolina's economy and environment. I'm excited about the opportunity to apply the knowledge that I've acquired at Duke University to help The Conservation Fund and its many partners sustain North Carolina's economy and conserve its natural resources."

Holman will lead the Fund's efforts to advance land and water conservation across North Carolina. Over the past 28 years, the Fund has conserved more than 200,000 acres in the state, protecting icons such as Grandfather Mountain and Chimney Rock state parks, DuPont State Recreational Forest, Lake Logan, Palmetto Peartree Preserve and Pocosin Lakes National Wildlife Refuge. Much of this work has been led by Senior Associate Dick Ludington, whose real estate efforts at the Fund continue. The organization's work in North Carolina also includes long-standing community and economic development efforts.

"Bill has been a champion for conservation across North Carolina, and we're thrilled that he's joining The Conservation Fund as it works with willing sellers to protect land and pursues conservation-oriented economic development," said R. Michael Leonard, vice chairman of The Board of Directors of The Conservation Fund and an attorney with Womble Carlyle Sandridge & Rice. The Conservation Fund President and CEO Larry Selzer added, "Bill's breadth of experience, creative approach to integrating environmental and economic goals, and ability to work with people from every sector make him an ideal leader for our North Carolina work in the years ahead."

At Duke, Holman collaborated with the City of Raleigh and local land trusts on their innovative Upper Neuse Clean Water Initiative, where the city's water customers conserve important lands in the Falls Lake watershed. Holman previously served as Governor Jim Hunt's secretary of the Department of Environment and Natural Resources and as executive director of the N.C. Clean Water Management Trust Fund.

"Bill has been an invaluable member of the Nicholas Institute family from the beginning, and he has helped build the Institute into a trusted resource in the state energy and environmental debates," said Tim Profeta, Director of Duke's Nicholas Institute for Environmental Policy Solutions. "We will miss Bill's infectious enthusiasm and tremendous wisdom on a daily basis, but know that he will remain part of our work and conversations from his new role."

A top-ranked national nonprofit, The Conservation Fund combines a passion for conservation with an entrepreneurial spirit, understanding that lasting conservation solutions must make environmental *and* economic sense. Since

*(Continued on page 6)*

(Holman—continued from page 5)

1985, the Fund has helped community, government and business leaders protect more than seven million acres of high-priority conservation lands nationwide, including wildlife habitat, working farms and forests, community green space and historic sites.

Many of The Conservation Fund's national programs are based in Chapel Hill, including the Natural Capital Investment Fund, Resourceful Communities, Shade Fund, and Strategic Conservation. The NC office is the Fund's largest office outside of its Arlington, VA headquarters.

## McNulty Named “Most Distinguished” in Forest Science

Posted by [zhoyle](#) on February 4, 2013

Dr. Steven McNulty, research ecologist with the U.S. Forest Service Southern Research Station (SRS), recently received the agency's national Research and Development “Distinguished Science Award.” He is recognized for sustained research productivity, proactive science technology, innovative leadership, applied forest science, and longtime federal service. McNulty accepted his award during the February 12, 2013, ceremony in Arlington, VA.

“I'm deeply honored to receive the Forest Service distinguished science award,” says McNulty, a 21-year career scientist based in Raleigh, NC, who has written more than 150 scientific papers and given hundreds of scientific presentations.

“Forest science positively impacts some of society's most significant environmental issues that impact citizens right here in Raleigh, including climate change, water supply, and timber production. I value collaborating with a team of public, private, and university partners who are on the cutting-edge of science exploration and discovery.”

McNulty's individual research focuses on continental-scale forest water, productivity, and health modeling, with emphasis given to interactions and response of forests to global climate change, acid rain, and other environmental stresses. A North Carolina State University USDA Professor of Natural Resources, McNulty also serves as an adjunct professor at the University of Toledo (Ohio) and Beijing Forestry University (China).

McNulty received forest and natural resources degrees from the University of Wisconsin - Madison, and a PhD in natural resources from the University of New Hampshire, under the direction of renowned scientist Dr. John Aber. He leads a dynamic research team within the SRS [Eastern Forest Environmental Threat Assessment Center](#), located on North Carolina State University's Centennial Campus. An internationally recognized expert on climate change issues, McNulty spearheads development of research and tools designed to help land managers better understand and cope with climate change impacts on forest management. *-Perdita Spriggs*

**For additional information: Dr. Steven McNulty at (919) 515-9489 or [smcnulty@fs.fed.us](mailto:smcnulty@fs.fed.us)**



## Schaefer Introduced as N.C. Forestry Association's New Executive Vice President

Newly appointed N.C. Forestry Association's (NCFA) Chairman of the Board Ashley Faircloth announced in the new business section of their Board of Directors Meeting that Bob Schaefer has been chosen among the talented pool of 20 candidates who applied for the position as the next Executive Vice President of the organization.

"We are pleased to announce Bob Schaefer as our new Executive Vice President," stated Faircloth. "Bob has a great understanding of our association as a past president, and his management experience and forest products background will be a tremendous plus for our association as we move forward."

Schaefer, a past NCFA President, had been working with the association as a contract employee through the Sentinel Forest Project. A graduate of the University of Kentucky with a bachelor's degree in Forestry, Schaefer has over 25 years in the forest products industry with Weyerhaeuser and Williamette.

In addition to his years on the NCFA's Executive Committee, Schaefer has been active on several NCFA committees. He also has been strong supporter of the Friends of Forestry Political Action Committee.

Other action items in the Board Meeting were the confirmation of the 2013 Executive Committee, the 2013 Board of Directors, and the approval of a 2013 operating budget for the association.

The 2013 Board of Directors includes elected members as well as one-year appointments and leaders of respective partner agencies/associations.

The Board also approved the operation budget for the association. The approved budget includes a deficit that will be covered by reserve funds accumulated over the past years. It is important to note that the budget includes several non-recurring expenditures such as database development and website improvements. The strategic planning group recommended the NCFA move quickly on the upgrading the association's technology. The goal is to return the NCFA to a "balanced budget" in 2014.



*Bob Schaefer*

### **2013 Executive Board of the NCFA**

- **Chairman of the Board: Ashley Faircloth**
- **President: Allen Plaster**
- **President/elect and Treasurer: Ray Allen**
- **First Vice President: Frank Rackley**
- **Eastern Vice President: Jim Durham**
- **Piedmont Vice President: Bernard Rose**
- **Western Vice President: Fred Hardin**
- **Executive Vice President: Bob Schaefer**
- **Forestry Mutual Insurance Co.: Sen. Michael Walters**

## Wildlife Resources Commission Biologist Wins Award

**RALEIGH, N.C. (Nov. 7, 2012)** – Bennett Wynne, a fisheries biologist with the N.C. Wildlife Resources Commission, was named Fisheries Biologist of the Year by the Southeastern Association of Fish and Wildlife Agencies at its 66<sup>th</sup> annual conference on Oct. 9, 2012 in Hot Springs, AR.

Wynne received the honor for his outstanding work in both aquatic habitat conservation and fisheries management. As the agency's Anadromous Fisheries Coordinator, Wynne coordinates the management of coastal migratory stocks of shad, herring, striped bass and Atlantic sturgeon. He has developed critical working relationships with numerous stakeholders concerning enhancement of aquatic habitats for the benefit of these populations.

“Bennett works diligently to assure adequate spawning flows for migratory fish in North Carolina’s coastal rivers, continually looking for opportunities to increase access to upstream habitats,” said Robert Curry, chief of the Division of Inland Fisheries.

On the Cape Fear River, Wynne advocated for years in support of construction of a rock arch fish passageway over Lock and Dam 1 – the first impediment to anadromous fishes migrating upriver from the ocean. Beginning June 1, 2011, the U.S. Army Corps of Engineers began construction of a rock arch fish passageway at this location, and the project is now almost complete.

“This is a landmark accomplishment, representing the first rock arch structure for fish passage built in North Carolina, and one of only a few in the Southeast,” Curry said.

Wynne is currently involved with evaluating the effectiveness of this structure and will help determine the potential for similar passage projects on dams upstream.

In 2010, he coordinated Atlantic sturgeon sampling in the upper Roanoke River basin, which resulted in the first documented capture of sturgeon from this area. Currently, he is leading the effort to develop plans to enhance river herring stocks in the Chowan River basin.

“Bennett fills a unique niche, seamlessly blending habitat conservation with fisheries management,” Curry said. “His contributions to anadromous fish population restoration in North Carolina are extensive and make him well deserving of receiving an honor as prestigious as the Southeastern Association of Fish and Wildlife Agencies’ Fisheries Biologist of the Year.”

The Southeastern Association of Fish and Wildlife Agencies is an organization whose members include the N.C. Wildlife Resources Commission and state agencies with primary responsibility for management and protection of the fish and wildlife resources in 14 other states, Puerto Rico and the U.S. Virgin Islands.

For more information on the Southeastern Association of Fish and Wildlife Agencies visit <http://www.seafwa.org/index.php>. To learn more about fishing in public, inland waters, visit the fishing page at <http://www.newwildlife.org/fishing>.



*Bennett Wynne holds an Atlantic sturgeon, collected from Weldon in 2010.*

## **N.C. Forest Service Employee's of the Month**

The N.C. Forest Service (NCFS) has had a number of “Employee of the Month” winners since joining the N.C. Department of Agriculture and Consumer Services (NCDA&CS). A couple of the most recent winners include Pam Hammond, Office Manager, for and Michael “Turbo” Carlisle, Forest Fire Equipment Operator (FFEO).

### **Pam Hammond—Office Manager—January 2013**

Pam performs all of her job functions with a helpful and positive attitude. She demonstrates amazing initiative on a daily basis. Her spirit and attitude towards her job permeates the entire district office and makes it a better place to work while providing the citizens of North Carolina outstanding customer service with integrity. Pam shows her commitment to people in that she is the sole person in the district that provides administrative support in the areas of workers compensation, benefits and pay issues. Pam excels beyond expectations and demonstrates excellence in customer service by supplying all personnel with whatever support is needed. If Pam does not know the answer she will find the answer to provide for the needs of the employee. Pam speaks fluent BEACON, the state online payroll system, and is often tasked with unraveling some employees pay statement mysteries. Pam demonstrates excellent initiative and very often completes tasks before she is even asked to do so. Pam assists in coordinating the retirement celebrations for retiring employees; this includes selection of the venue, menu planning and compilation of the program.

Pam also provides excellent customer service to the public by serving as the main point contact for the public in the absence of the office clerk.

Pam is dedicated to accomplishment in that she is responsible for preparing and disseminating the annual budget proposals that must be voted on by the County Commissioners for each of the eight counties and the Jordan Lake Educational State Forest in District 3, located in the southern part of the Piedmont with its office in Rockingham. Pam also oversees not only the payroll issues but the billing questions in the district with a combined budget in excess \$2 million. This includes the myriad of questions encountered as the Forest Service transitioned from Department of Environment and Natural Resources to NCAG&CS.

Pam demonstrates enthusiasm for the work performed by the Forest Service and is always happy to help out in whatever is asked of her. Pam recently displayed this characteristic as well as a spirit of volunteerism by serving as part of a N.C. Forest Service Incident Management Team assisting on the Simmons Road Fire in Bladen County. Pam also assisted and participated in an American Red Cross Blood Drive held at the district office.

### **Michael “Turbo” Carlisle—Forest Fire Equipment Operator—October 2012**

Turbo is a 21 year veteran of the N.C. Forest Service as a forest fire equipment operator. He has always excelled in his primary job duties, making sure that everything he does is to the level of absolute perfection. His assigned equipment is always neat, clean and organized. He keeps it washed, waxed and repaints it on regular intervals to keep it looking new. Every day, Turbo shows up for work with a starched and pressed shirt and shiny shoes, representing not only himself, but NCFS and NCDA&CS in the highest of professional regard. Turbo is recognized for his abilities by being one of the longest reining members of the NCFS District 8 Pre Arrange Tractor Plow Strike Team, a group made up of the best of the best in wildland firefighting with Tractor Plows. District 8 is in the southeastern part of the

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state and consists of six counties including Pender County where Turbo works out of. Turbo goes far above and beyond his assigned duties by volunteering to be on several state committees including the NCFCS uniform committee, the Region 1, coastal, initial attack committees, Tractor and Plow Safety rewrite committee and the NCFCS honor guard. Serving on these types of committees is a rarity among FFEOs. In addition, Turbo is a great instructor, and utilizes his skills voluntarily to participate as cadre at several schools annually, including: Region 1 fire school; Mountain Truck Driving School; CPR; Forklift Certification; Basic FFEO; Advanced FFEO; Region 1 Strategy and Tactics; and others on occasion. He also teaches several introduction to wildland firefighting courses, along with wildland fire suppression to local volunteer fire departments annually. In addition to the many schools he helps to teach, Turbo utilizes his teaching skills to mentor young FFEOs, providing them with valuable knowledge and insight to help them learn how to do their job effectively and safely.

Outside of the Forest Service, Turbo serves as a Battalion Chief on the Burgaw Fire Department, where he uses his teaching skills to train and develop young fire fighters. He helps to organize various fund raisers and recognition events such as the annual Pender County firemen's appreciation day throughout each year. He is a certified EMT and although he receives no additional pay for maintaining or using this qualification in his job, he readily takes the lead in medical response on the job when needed. Turbo keeps a full EMT medical kit and AED with him at all times, including when he is plowing fires with the tractor plow. Having this level of emergency medical care available is a piece of mind to the firefighters around him that is rare in our profession. Turbo is a unique individual that finds no task too menial or too challenging. He simply takes it all in with a smile, a laugh, and lifts those up around him to want to perform better. His focus is to do the very best he can each and every day to help those around him, in his community and in the work place.

## Upcoming Events

- **Working Together for Longleaf and Prescribed Fire:** August 27-28, 2013—Wilmington, NC.  
This workshop is sponsored by the [NC Prescribed Fire Council](#) and the NC Longleaf Coalition.
- **2013 Mid-Atlantic Logging & Biomass Expo:** September 20-21, 2013—Smithfield-Selma Area  
<http://www.ncforestry.org/WEBPAGES/PROLOGGER/LOGDEMO/LOGDEMO.htm>
- **2013 NCFCA Annual Meeting:** October 2-4, 2013—Doubtree Hilton Riverfront in New Bern.  
The room rate for NCFCA members is \$139.  
<http://www.ncforestry.org/WEBPAGES/MEMBERSECTION/MEMBERSHIPINDEX.htm>
- **Wilkes-Yadkin County Area Forestry Tour:** May 3, 9:30 a.m. to 4 p.m.—Yadkin County  
Presented by the NC Tree Farm Program in cooperation with the North Carolina Forest Service, Forestry Mutual Insurance, Louisiana-Pacific Corporation, and Weyerhaeuser. It will be held in the Windsor Crossroads Community Building  
<http://ncforestservice.gov/Hot%20Topics/WilkesYadkinWorkshopFlyer.pdf>

# Taxes and Estate Planning

## Help for Forest Landowners: Estate Planning

Posted by [zhovle](#) on December 6, 2012

Family forest owners may use consulting foresters or State extension foresters for advice on the technical details of land management, but many owners shy away from thinking about how best to pass their forest on to the next generation. Poor estate planning—or no planning at all—can result in a tax bill that requires selling timber or forest land, which in turn can lead to subdivision and development.

[Estate Planning for Forest Landowners](#), a Southern Research Station (SRS) publication, provides a comprehensive guide to estate planning specifically designed for forest landowners.

“Over the past decade, demographic, social, and market trends have converged to increase the effects of the Federal estate tax on rural landowners.” says [John Greene](#), research forester with the SRS [Forest Economics and Policy unit](#) based in Research Triangle Park, North Carolina. “Although the minimum estate value for paying tax may seem high, family forest owners, farmers, and ranchers remain many times more likely than the U.S. population in general to incur the estate tax.”

“Besides,” Greene adds, “the guide is about estate planning, not just the estate tax. As well as describing how to use the available tax provisions to minimize or avoid the Federal estate tax, it discusses strategies and tools to interest younger family members in keeping the forest intact and train them in how to manage it for the values the family holds for it.”

Greene and coauthors William Siegel and Harry Haney designed *Estate Planning for Forest Landowners* to provide specific guidelines and assistance on applying estate planning to forest properties. The guide, which is available free of charge from SRS, is designed for use by both private landowners and advisers—legal, financial, insurance, and forestry professionals—who help them with estate planning. The guide presents a working knowledge of the Federal estate and gift tax law as it relates to forest properties.

[Access Estate Planning for Forest Landowners.](#)

For more information, email John Greene at [jgreene01@fs.fed.us](mailto:jgreene01@fs.fed.us)



*Most of the forested land in the South is owned by families and private individuals. Photo by U.S. Forest Service.*

## Timber Tax Sources Available for Forest Landowners

- The National Timber Tax Website - <http://timbertax.org> - Is sponsored by the USDA Forest Service and managed by the University of Georgia's Center for Forest Business. It contains valuable information and links to timber tax information including federal, estate and state tax law websites. It also has a section on new developments with links to new publications, workshops, related sources of information and a whole lot more. **Dr. Linda Wang**, Timber Tax Specialist with the Forest Service is responsible for the content.
- NWOA Timber Tax Website - <http://timbertax.com> - Is maintained and managed by the National Woodland Owners Association. It has valuable links to service providers and state Extension Services and other course sponsors.
- Federal Income Tax on Timber: A Quick Guide for Woodland Owners, 4th Edition, 2012 - FS-1007 - [Click here for link to an online pdf file.](#)
- Tax Tips for Forest Landowners for the 2012 Tax Year - Management Bulletin R8-MB 141. [Click here for link to an online pdf file.](#)
- In addition, the forestry webinars portal (<http://forestrywebinars.net>) hosted a live webinar on timber taxes recently. The archived version can be accessed at any time by following the prompts on the website to search for past webinars. Make sure you search for the webinar entitled "Income Tax on Timber for Your 2012 Tax Return Filing".

## Wildlife

### Tear Down the Wall *The Pressure is On*

The U.S. Department of Agriculture's Josh Biesecker uses a high pressure water system to break through a beaver dam in Orange County. Within 10 minutes, Biesecker cut a large hole that allowed the water that was building towards the road drain down the once blocked stream. The Beaver Management Program Assistance Program (BMAP) successfully recovers acreage flooded by beaver dams for private landowners, the North Carolina Department of Transportation and local municipalities. To learn more about North Carolina's Beaver Management Program contact the USDA Wildlife Services at 866-487-3297 or call the N.C. Wildlife Resource Commission at 919-707-0050.



## Cave Climates and White-Nose Syndrome

Posted by [zhoyle](#) on February 28, 2013

[White-nose syndrome](#), caused by the fungus *Geomyces destructans*, has decimated bat populations throughout eastern North America. Recent estimates show that 6 to 7 million bats have succumbed to white-nose syndrome.

This fungus thrives in the cool, moist conditions found in many caves and mines where bats may also hibernate. [Roger W. Perry](#), a research wildlife biologist with U.S. Forest Service [Southern Pine Ecology](#) unit recently published an updated [review of bat hibernation and cave climates in the journal \*Environmental Reviews\*](#) to aid managers and researchers working to address this disease.

“The emergence of white-nose syndrome refocused interest on the physical factors that influence cave climates and how cave climates could potentially interact with growth of the fungus and affect bat survival,” explains Perry. “I wanted to understand why caves just a short distance apart may potentially differ in white-nose syndrome infection and mortality and how the climate in a cave could influence fungal growth.”

Several different species of bats spend the winter in underground shelters. To survive on their limited fat reserves during winter, bats generally hibernate in structures that provide temperatures between 4 and 10°C (39-50°F). Caves and mines often provide these cool but above-freezing air temperatures. The high humidity in these underground shelters also helps reduce water loss in bats during hibernation.

Various factors can reduce or increase cave temperatures and result in favorable choices for hibernation. These factors include a cave’s size, depth, and topographic setting as well as the number of openings, elevation, airflow patterns, physical configuration, and water infiltration. Humidity in caves during winter depends on outside air temperature, airflow, evaporation rates, and condensation rates. “Unfortunately, these high humidity and low temperature conditions are perfect for growing *Geomyces destructans*, which grows best in cold, but above-freezing temperatures,” says Perry.

In regions where mean annual temperatures are not within the range of optimal growth for *Geomyces destructans*, many caves used by bats during winter may still harbor this lethal pathogen. “The climate within individual caves may make some more conducive than others for growth of this fungus, but right now we still don’t know enough about this interaction to say for sure,” says Perry. “With the rapid spread of white-nose syndrome across the United States and the 90 to 100 percent mortality in caves that have been infected with it, managers and researchers are in a race to find answers to slow or stop the spread.”—*Nancy Koerth*

[Read the full text of the article.](#)

For more information, email Roger W. Perry at [rperry03@fs.fed.us](mailto:rperry03@fs.fed.us)

[Access the latest publications by SRS scientists.](#)



*Cluster of endangered Indiana bats hibernating in cave.  
Photo by Roger W. Perry.*

# Invasive Species Updates

## Insect invasion: Tree-killing beetle Discovered in Greenbrier Area of Smokies

### *Emerald ash borer creeps deeper into park*

By Morgan Simmons Monday, December 3, 2012

Courtesy of the Knoxville News Sentinel Co.

PITTMAN CENTER — Glenn Taylor was hiking on his day off in the Greenbrier area of the Great Smoky Mountains National Park when he noticed wood chips scattered along the trail.

A biologist for the Smokies, Taylor suspected the worst.

For years the park had been on the lookout for the arrival of the emerald ash borer, a tiny green beetle that feeds exclusively on ash trees and is believed to have been accidentally introduced to the Detroit area in 2002 on packing material from Asia.

The park first confirmed the emerald ash borer's arrival last summer at front-country sites near two park entrances. Taylor, on the other hand, was hiking in the backcountry next to a stream. He came across the first pile of chips beneath ash trees less than a mile from the trailhead. A little farther, he found more chips littering the ground in quarter-size chunks.

Taylor suspected that woodpeckers had been feeding on emerald ash borer beetle larvae beneath the bark, and that in all likelihood, he was looking at a backcountry infestation that was perhaps 5 years old.

"It was like getting kicked in the gut," Taylor said.

Since it first appeared in Michigan a decade ago, the emerald ash borer has killed tens of millions of ash trees across 16 states and two Canadian provinces. In 2010 the invasive beetle was discovered in Tennessee at a truck stop in West Knox County. Today, the emerald ash borer has spread to 18 Tennessee counties.

Taylor's suspicion of emerald ash borer was confirmed recently when a forest insect specialist with the U.S. Forest Service peeled off a piece of the inch-thick bark to reveal the serpentine gouge marks — or feeding galleries — left by the beetle larvae.

The adult emerald ash borer lays its eggs on the bark of the ash tree during the summer. After hatching, the larvae burrow beneath the bark and begin feeding on the tree's living layer, known as the phloem, disrupting the circulation of food and water and killing the tree, usually in three years.

On a recent visit to the infestation site in Greenbrier, Taylor said the emerald ash borer will attack trees as small as 1



Park biologist Glenn Taylor examines a green ash tree while looking for evidence of the emerald ash borer in the Greenbrier section of the Great Smoky Mountains National Park. Photo by Adam Brimer — Knoxville News Sentinel



Evidence of the presence of the emerald ash borer can be seen on this green ash in the Greenbrier section of the Great Smoky Mountains National Park Tuesday, Nov. 27, 2012. The bark on this tree was stripped away using a knife to reveal the damage caused by the tiny insect. Photo by Adam Brimer — Knoxville News Sentinel

(Continued from page 14)



Evidence of the presence of the emerald ash borer can be seen on this green ash in the Greenbrier section of the Great Smoky Mountains National Park Tuesday, Nov. 27, 2012. Photo by Adam Brimer – Knoxville News Sentinel



A tiny hole created by an emerald ash borer can be seen in the bark of a green ash in the Greenbrier section of the Great Smoky Mountains National Park Tuesday, Nov. 27, 2012. Photo by Adam Brimer – Knoxville News Sentinel



Park biologist Glenn Taylor holds a vial containing an emerald ash borer specimen in the Greenbrier section of the Great Smoky Mountains National Park Tuesday, Nov. 27, 2012. Photo by Adam Brimer – Knoxville News Sentinel

inch in diameter, and that the beetles typically start at the top and work their way down.

"When you see woodpecker holes down this low on the trees, the infestation is pretty advanced," he said. "These trees are on their way out. Some already look dead."

The emerald ash borer is just the latest in a series of exotic-invasive insects to plague the Smokies. In 1963 the balsam woolly adelgid was discovered on Mount Sterling and eventually wiped out an estimated 90 percent of the park's Fraser firs. More recently, park managers have had to contend with a tiny non-native insect called the beech scale, whose feeding habits cause the spread of a fungal disease that eventually kills the beech tree.

A decade ago the hemlock woolly adelgid – an Asian import that feeds on hemlock trees – was discovered inside the park near Fontana Dam.

The park is home to two species of ash, green and white, with green ash occurring at lower elevations and white ash distributed all the way from low elevations to around 5,200 feet.

Park scientists say the trees are ecologically important for a number of reasons. "The seeds of ash trees provide food for small animals and large birds, and the flowers are important for pollinators," said Kristine Johnson, supervisory forester for the Smokies.

In recent years state and federal officials have hung more than 4,500 purple box traps in a 50-mile radius of Knoxville to track the range of the emerald ash borer infestation. The beetles are notorious firewood hitchhikers. In the Smokies, campers are prohibited from bringing any type of firewood (not just ash) from areas that have been quarantined for emerald ash borer or other destructive pests.

Park scientists say the next invasive insect threat on the horizon is the Asian long-horned beetle, a wood borer that has spread to southeastern Ohio, some 300 miles from the Smokies.

Taylor said the park's strategy for combating the emerald ash borer will parallel the steps taken against the hemlock woolly adelgid.

Initially, ash trees in campgrounds and along roads will be treated with systemic insecticides (the same chemicals used on the hemlock woolly adelgid) to maintain public safety. The next priority will be on saving high-value ash stands in the backcountry using chemical treatments combined with the release of two species of stingless, parasitic wasps that are native to Asia and feed on emerald ash borer larvae.

Funding to control the emerald ash borer will come mostly from the U.S. Forest Service.

"There never will be a complete eradication," Taylor said. "We want to protect the public and save as much of our old-growth ash as we can. If we do nothing, we could lose 99 percent of our ash trees like they've seen in Ohio."

## Managing For Hemlock Woolly Adelgid

The nonnative invasive insect hemlock woolly adelgid is taking its toll on eastern hemlock trees in the Southern Appalachian region of the United States, where the tree often serves as a foundation or keystone species along mountain streams. A [new article](#) by U.S. Forest Service researchers covers the latest in control strategies for hemlock woolly adelgid and the ecological impacts of the widespread death of eastern hemlock.

Authored by Forest Service Southern Research Station scientists [Jim Vose](#), [Dave Wear](#), [Bud Mayfield](#), and [Dana Nelson](#) and published March 1 ([available now online](#)) in the journal *Forest Ecology and Management*, the article includes a matrix that provides the range of decisions land managers in affected areas will need to make in the coming years, each decision tied to outcomes and implications.

Despite aggressive efforts to control hemlock woolly adelgid infestations, large numbers of hemlock trees in the Southern Appalachian region are dead or in poor health. This loss has important implications. In addition to providing year-round cover for wildlife, hemlock has a strong influence on streamside habitat conditions and stream health. The shade cast by these majestic trees cools the water where brook trout and other stream organisms live; hemlock needles and wood decompose slowly, providing unique habitat for important forest floor organisms such as salamanders.

As hemlock trees die, many of these important functions are changing. Hemlock mortality is adding large quantities of litter to the forest floor and streams; even more will be added as standing dead trees continue to decompose. Hemlock death is also changing basic ecological processes such as the cycling of carbon, nutrients and water. Some studies predict as much as 30 percent increase in streamflow during the winter months in areas where hemlocks dominate.

Many of these changes may prove to be short-term or localized; more significant changes are expected in the coming decades as other species replace hemlock. In areas where the evergreen shrub rhododendron is absent, red maple, sweet birch, and yellow poplar will probably take the place of eastern hemlock. Where rhododendron is already present, the shrub will probably spread, and could limit recruitment of overstory tree species. These changes in species composition may alter habitats and ecological processes required by terrestrial and aquatic animal and plant species.

The good news is that land managers can start implementing control and restoration activities now to prevent undesirable long-term impacts.

Controlling the spread and impacts of hemlock woolly adelgid involves the integrated use of multiple approaches including chemical control, biological control, cultural treatments, host resistance, and host gene conservation. Chemical control has been extremely effective at small scales, but biological control is currently the only viable option for controlling hemlock woolly adelgid across the landscape, though re-

search continues on other possibilities.

Where control efforts fail, land managers should anticipate hazards and other impacts from dead and dying trees. In recreation areas near streams, for example, trees may need to be felled to minimize hazards, and stream crossings should be carefully monitored to ensure that culverts remain clear. In order to maintain or restore the benefits provided by hemlock trees, restoration efforts may require novel approaches such as the introduction of nonnative or hybridized hemlock species, facilitated movement of native species to new habitats, and aggressive management of existing undesirable species to benefit desirable species. In all cases, monitoring will be required to evaluate efforts and guide adaptive approaches. —

*Patty Matteson* – [Access the full text of the article with matrix of management options.](#)

For more information, email Jim Vose at [jvose@fs.fed.us](mailto:jvose@fs.fed.us).

## **Haywood County Wood Products Under NCDA&CS Quarantine For Thousand Cankers Disease**

RALEIGH—The N.C. Department of Agriculture and Consumer Services has placed Haywood County wood products under quarantine due to a recent detection of thousand cankers disease in the Great Smoky Mountains National Park.

“This marks the first time the disease has been detected in the state, and by placing restrictions on a variety of plant material and wood products, we hope to keep the disease from spreading into other counties,” said Agriculture Commissioner Steve Troxler. “Something as simple as moving firewood from an infected area to an uninfected county could increase the risk of spreading this disease.”

Thousand cankers disease is a newly recognized disease primarily affecting black walnut trees. It is caused by the *Geosmithia morbida* fungus, which is spread by the walnut twig beetle. Thousand cankers disease has produced widespread death of black walnuts in many western states during the past decade. Other species of walnut, such as Arizona walnut, English walnut and California walnut, have also shown varying degrees of susceptibility to this fungus.

The following items fall under the quarantine restrictions: walnut plants and plant parts including firewood, lumber, logs, stumps, roots, branches, and composted and uncomposted chips. Regulated items cannot be moved outside the county. Exceptions to the quarantine restrictions include nuts, nut meats, hulls, processed lumber with square edges that is 100 percent bark free and kiln-dried, and finished wood products without bark, such as furniture, instruments and gun stocks.

NCDA&CS Plant Industry Division and N.C. Forest Service personnel will continue to monitor counties across North Carolina for the presence of this disease. Anyone with questions about this quarantine should contact Phil Wilson, NCDA&CS plant pest administrator, at 919-707-3730, or go to the website

[http://ncforestservice.gov/forest\\_health/forest\\_health\\_thousandcankers.htm](http://ncforestservice.gov/forest_health/forest_health_thousandcankers.htm)



# Forest Health *Notes*

Volume 201301 - TCD

January 2013

## Thousand Cankers Disease Confirmed in North Carolina Mountains

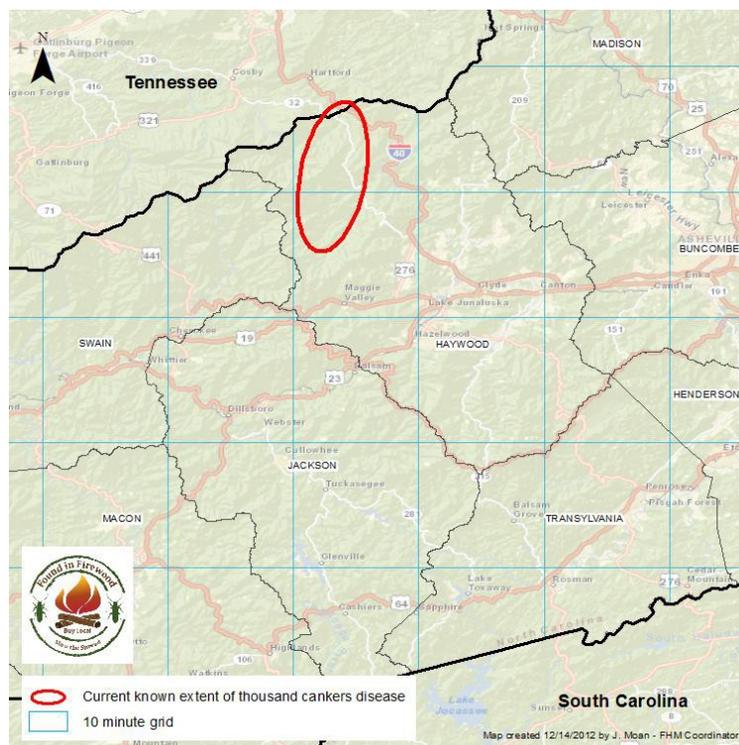
Our fears were recently realized when *Geosmithia morbida*, the fungus that causes thousand cankers disease (TCD), was confirmed in declining walnuts in Haywood County, North Carolina within Great Smoky Mountains National Park. The disease was found by researchers during surveys of the park's walnuts. This is the first detection of TCD in North Carolina.

In 2010, the Tennessee Department of Agriculture confirmed the presence of TCD in Knox County, Tennessee. This find in Tennessee marked the first time the disease had been confirmed east of the Mississippi River and within the native range of black walnut. By the summer of 2012, the disease had been found in six counties in eastern Tennessee, including two that border North Carolina, several counties around Richmond and Fairfax, Virginia, and in Pennsylvania.

### What it is

Thousand cankers disease is caused by the fungus *Geosmithia morbida*, which is vectored by the walnut twig beetle (*Pityophthorus juglandis*).

Prior to the recent finds in the East, the walnut twig beetle had been identified in association with walnut mortality in several western states including Arizona\*, New Mexico\*, California\*, Utah, Colorado, Idaho, Oregon, and Washington. By itself, the beetle does not cause significant problems; however, in combination with *Geosmithia morbida* it causes the highly destructive TCD. The walnut twig beetle is in the



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same family as the southern pine beetle and Ips engraver beetles, and like these beetles, it is very small; adults are roughly 1/16 of an inch long.

The TCD pathogen generally kills the host tree 2-3 years after initial symptoms are observed. When a beetle bores into the twig, the *Geosmithia* fungus causes a small brownish-black canker to develop within the bark around the beetle's entry hole. Branches and stems may be attacked by many beetles, resulting in a large number of these small cankers that eventually overlap and girdle the tree. The thousands of beetle attacks and subsequent cankers give thousand cankers disease its name.

Both walnut species native to North Carolina (black walnut and butternut) can be affected by this disease. Black walnut is considered highly susceptible to TCD. As of now, we do not know how to protect or save trees from thousand cankers disease. The best thing to do at this point is to quickly detect its presence in new areas and destroy affected portions of diseased trees. The primary focus right now is to prevent further spread of this disease, especially spread caused by humans.

## Signs and Symptoms

The most obvious symptoms are dieback and mortality. Like many species of bark beetles, small, round entry/exit holes may be present along infested branches or stems and adult beetles may be present at certain times of the year. Additionally, some weeping may be seen around beetle entry holes. If you suspect that a tree may have TCD, the walnut twig beetle galleries and associated cankers can be found within the bark. Photos of signs and symptoms are shown on Page 4.



## How It Spreads

The walnut twig beetle and TCD can easily be transported to new locations with human assistance. The beetle is very small and very difficult to detect. The cankers caused by the fungus can also be tricky to find since they are confined to a very thin layer below the outer bark. Even with a trained eye, signs of both the beetles and the pathogen can be easily missed.

Any twig beetles living in the bark of affected wood can emerge during transport or at the final destination and attack new trees, spreading the disease to new locations.

Though natural spread is occurring around infested areas, the initial infestation in Tennessee was found at least 1,000 miles from the next closest known infestation. We can help limit the spread of TCD in North Carolina by promoting the use of local firewood in our homes and at our parks and campgrounds.

*(Continued on page 20)*

*(Continued from page 19)*

## **What is Being Done**

After the pathogen was found in the state for the first time, an evaluation determined that it is in the best interest of the state and its walnut resources to try to confine the infected area to as small of an area as possible. Movement of walnut plants and plant parts including nursery stock, firewood, logs, stumps, roots, branches, and composted and uncomposted chips can quickly spread walnut twig beetle, and the fungus that causes the disease, to new areas of the state.

Walnut trees can be harvested in a quarantined area as long all parts of the tree (except nuts, nut meat and hulls) stay within the quarantined area. That means harvested materials can only be left on site or transported to locations inside of the quarantined boundaries. This applies to both diseased and healthy trees.

Only wood that has been processed into lumber (100% bark-free, kiln dried and square edges) or finished wood products without bark, including walnut furniture, instruments, and gun stocks can be moved out of a quarantined area. Harvested walnut wood can freely move from a non-quarantined area into the quarantine boundaries.

### **Advice for Landowners**

There is no need to panic just because the disease is found in the state. Natural spread of thousand cankers disease is thought to be slow. If someone is growing walnut timber on their property, they should monitor their trees for disease symptoms. As long as trees are healthy, growing, and not under imminent threat from the disease, they should continue to be managed according to a forest management plan.

If walnut trees are found to be infected, a salvage harvest may be an option. The walnut twig beetle and the fungus are found only in the bark and possibly on the edge of the live wood so timber quality will not be affected directly by the insect or pathogen.

There are many variables that determine the value of walnut trees for wood products. For an appraisal of the value of walnut wood and assistance with marketing, landowners/homeowners should contact a consulting forester or consulting arborist, whichever is appropriate for their situation:

[http://www.ncforestsERVICE.gov/Managing\\_your\\_forest/consulting\\_foresters.htm](http://www.ncforestsERVICE.gov/Managing_your_forest/consulting_foresters.htm)

[http://www.ncforestsERVICE.gov/Urban/urban\\_consultingarborists.htm](http://www.ncforestsERVICE.gov/Urban/urban_consultingarborists.htm)

### **What To Do If You Suspect Thousand Cankers Disease**

Because state and federal agricultural and forestry agencies are tracking the spread and potential impacts of thousand cankers disease, confirmation of any new records of the disease must be made according

*(Continued on page 21)*

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*Declining Walnut*

C. Utley, CSUE, [www.forestryimages.org](http://www.forestryimages.org)



*Severely cankered stem*

N. Tisserat, Colorado State University,  
[www.forestryimages.org](http://www.forestryimages.org)

to strict guidelines. Report the location and descriptions of any walnut trees suspected of being infected with TCD to:

1-800-206-9333 or [newpest@ncagr.gov](mailto:newpest@ncagr.gov).



*Weeping from beetle entry holes*

N. Tisserat, Colorado State University,  
[www.forestryimages.org](http://www.forestryimages.org)

## Additional Information

For additional information, please visit these links:

USFS Pest Alert: [http://na.fs.fed.us/pubs/palerts/cankers\\_disease/thousand\\_cankers\\_disease\\_screen\\_res.pdf](http://na.fs.fed.us/pubs/palerts/cankers_disease/thousand_cankers_disease_screen_res.pdf)

USFS Forest Health Protection: [www.fs.fed.us/r8/foresthealth/forestpests/tcd/](http://www.fs.fed.us/r8/foresthealth/forestpests/tcd/)

Firewood movement: [www.dontmovefirewood.org/](http://www.dontmovefirewood.org/)

For other non-native forest pests of concern to North Carolinians please visit [www.ncforestservation.gov/forest\\_health/fh\\_firewood.htm](http://www.ncforestservation.gov/forest_health/fh_firewood.htm)

**DO NOT COLLECT SAMPLES**  
**SAMPLES SHOULD ONLY BE COLLECTED AND**  
**TRANSPORTED BY TRAINED PERSONNEL.**

## Contacts:

**For information about TCD in North Carolina, contact NCFS Forest Health Branch staff**

- Brian Heath, *Forest Health Specialist – West*, [Brian.heath@ncagr.gov](mailto:Brian.heath@ncagr.gov), (828) 413-2291
- Kelly Oten, *Forest Health Specialist – East*, [Kelly.oten@ncagr.gov](mailto:Kelly.oten@ncagr.gov), (919) 609-1556
- Jason Moan, *Forest Health Monitoring Coordinator*, [Jason.moan@ncagr.gov](mailto:Jason.moan@ncagr.gov), (919) 553-6178 x223

**For regulatory or quarantine questions, contact Plant Industry Division**

- Phillip Wilson, Plant Pest Administrator, [Phil.wilson@ncagr.gov](mailto:Phil.wilson@ncagr.gov) (919) 707-3753
- Report New Infestations to: 1-800-206-9333 or to [newpest@ncagr.gov](mailto:newpest@ncagr.gov)

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## Biomass and Carbon

### **Biofuels Center Expands Sector Development Capabilities With \$1.14M Investment in Western NC, Enhances Innovative Opportunities**

OXFORD, N.C. – As a chief component of its 2012-2013 grants award process targeting biofuels development in the western part of the state, the Biofuels Center of North Carolina will award \$766,256 to a consortium of partners led by Advantage West Economic Development Group to fortify the biofuels sector and trigger its expansion in the region. The project, “Planting the Seeds for a Robust WNC Biofuels Sector,” will be collaboratively executed by Advantage West and 13 other entities, including: N.C. State University Mountain Horticultural Crops Research and Extension Center, Catawba and Transylvania counties, Appalachian State University Energy Center, Asheville-Buncombe Technical Community College, the N.C. Department of Agriculture and Consumer Services, Bent Creek Institute, Biltmore Estate, Blue Ridge Biofuels, Land-of-Sky Regional Council, Renewable Developers, Mountain Research Station, and communities and organizations brought together by a unique multiparty partnership.

The project partners will invest a 50-percent matching contribution of \$383,128, for a total project investment of \$1,149,384. The project also dovetails well with ongoing Biofuels Center-supported projects from previous grant cycles, including feedstock efficiency projects, woody biomass-to-biofuels feasibility analyses, and the Field to Fryer to Fuel (F3) initiative.

The partnership project will measurably increase biofuels production and use in western North Carolina through four central goals: (1) expand feedstock reliability, including oil crops, spent brewery grains, and woody biomass; (2) improve value-chain economics through co-product opportunities, including harnessing nutraceutical fractionations and waste glycerin; (3) expand demand through the establishment of a new biofuels-testing laboratory and development of outreach tools; and (4) ensure regional coordination from a new strategic western North Carolina biofuels coordinator, and investigate a multi-tenant biofuels and bio-products industrial park.

The 2012-2013 grants program – *Strengthening Feedstock's, Production, and Products in Western North Carolina* – is supported by funds from the Tennessee Valley Authority (TVA) Clean Air Settlement that were directed to the Center by the North Carolina General Assembly in the 2012 legislative session. Awards were determined through a competitive, peer-review process. Expert panels comprised of industry, nonprofits, and state agency representatives reviewed applications and made funding recommendations for approval by the Biofuels Center Executive Committee.

Western North Carolina holds boundless potential for biofuels and bio-products commercialization, said Biofuels Center president and CEO Steven Burke. “The value of this concerted effort cannot be overstated,” he said. “This will further position the state to grow jobs, secure its energy future, and enhance our

environment. Moreover, that the collaborators will invest nearly \$400,000 in this project demonstrates the region's firm commitment to developing new sectors and new economies."

Through this year's grant cycle – all of which will directly impact western North Carolina – awards will also be made to North Carolina State University, Caldwell Green Commission, and Mars Hill College:

- \$130,593 (North Carolina State University) · *Woody Biomass In-Field Drying Techniques for Thermochemical Conversion*; This project will investigate in-field drying techniques in western North Carolina to improve woody biomass delivery systems.
- \$102,000 (Caldwell Green Commission) · *Crude Glycerin Refining and Purification*; This project will produce higher-value, technical-grade glycerin from crude glycerine derived during biodiesel production.
- \$43,750 (Mars Hill College) · *Modeling Site Suitability for Biofuels Production in Western North Carolina*; This project will develop a spatial model of site suitability for biofuels production.
- \$28,000 (North Carolina State University) · *Availability of Woody Biomass for Biofuels in Western North Carolina*; This project will assess availability of soft hardwoods for potential facility locations in western North Carolina.

The Center received 21 pre-proposals totalling \$2,290,750 from 11 institutions following its September 2012 Request for Proposals (RFP). A total of 15 proposals entered the peer-review process, totaling \$2,372,436 in requests from eight institutions.

Strengthening and funding capabilities statewide for biofuels production is a prime task of the Biofuels Center, a private non-profit corporation funded by the North Carolina General Assembly to develop large capacity for biofuels statewide in coming years. The Center, located on North Carolina's Biofuels Campus in Oxford, implements sustained state policy, assists companies and all parties within the biofuels community, and works to meet North Carolina's goal: by 2017, 10 percent of the state's liquid transportation fuels will come from biofuels grown and produced within the state.

### Carbon In, Carbon Out: How Tree Harvests Affect Carbon Balance in a Planted Forest

Look around at all the wood and paper products we consider essential for daily life. Now, consider the carbon stored in those products – carbon that was removed from a forest ecosystem when trees were harvested. This type of carbon storage is quite important: while it's locked into these products throughout their useful life, this carbon is locked out of the atmosphere as a component of carbon dioxide, a climate-changing greenhouse gas.

As the world population grows, demand for tree-derived products is also increasing. To meet the demand, the area of planted forests to supply wood for products is also increasing. When compared to natural forests, harvests on planted forests equate to relatively frequent ecosystem disturbances. So how do

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these harvests affect the long-term carbon balance of a planted forest?

To examine this question, researchers from the [Eastern Forest Environmental Threat Assessment Center](#) and cooperating scientists from **North Carolina State University (NCSU)** developed a 25-year carbon budget (the budget describes the amounts of carbon entering and leaving an ecosystem) for a typical planted forest – a



*Eastern Threat Center biologist Emrys Treasure measures residue from harvest on loblolly pine plantation. Photo by U.S. Forest Service.*

commercial loblolly pine plantation in North Carolina. Results were recently published in the journal *Global Change Biology* at <http://www.srs.fs.usda.gov/pubs/41896>.

The researchers studied data from two loblolly pine plantations over 5 years and found that the ecosystems were very productive in terms of carbon that was used and stored during the growth of new plant material. However, following harvest, carbon stored in aboveground residue such as stumps and branches did not offset the loss of carbon from soil due to respiration by organisms that decompose tree roots.

Interestingly, as harvest residue decomposed, carbon was lost aboveground within about 2 years, but most of the soil carbon was lost during the third or fourth year after harvest, presumably due to roots that continued to live well after harvest. This loss of soil carbon was offset as aboveground biomass increased with regrowth of the forest. Researchers concluded that, while total soil carbon may or may not necessarily decrease throughout a 25-year harvest rotation cycle, older soil carbon contributes significantly to fluxes in a planted forest's carbon balance.

“The results highlight the vulnerability of existing soil carbon to decomposition. However, on the positive side, keeping this carbon pool from declining seems well within the control of forest management practices,” says Asko Noormets, a cooperating scientist from NCSU and the study's lead researcher. “It may be possible that slightly longer harvest rotation cycles and less intensive site preparation, for example, would help sustain high biomass productivity as well as long-term carbon storage in soils. We should seek to implement practices that balance the short-term economic interests with long-term environmental and societal services.” –*Stephanie Worley Firley*

For more information, email Steve McNulty at [smcnulty@fs.fed.us](mailto:smcnulty@fs.fed.us) .

Access the latest publications by SRS scientists at [http://www.srs.fs.usda.gov/pubs/new\\_pubs-srs.php](http://www.srs.fs.usda.gov/pubs/new_pubs-srs.php).

## Ozone Affects Forest Watersheds

**Scientists find ozone causes forests to use more water, reducing availability in the Southeast**

RALEIGH, NC, October 18, 2012 – U.S. Forest Service and Oak Ridge National Laboratory (ORNL) scientists have found that rising levels of ozone, a greenhouse gas, may amplify the impacts of higher temperatures and reduce streamflow from forests to rivers, streams, and other water bodies. Such effects could potentially reduce water supplies available to support forest ecosystems and people in the southeastern United States.

Impacts of ozone, a global scale pollutant, on forests are not well understood at a large scale. This modeling study indicates that current and projected increases in ozone in the 21st century will likely enhance the negative effects of warming on watersheds, aggravating drought and altering stream flow. Using data on atmospheric water supply and demand and statistical models, researchers with the Forest Service and ORNL were able to show what effects ozone can have on stream flow in dry seasons. Published in the November issue of the journal *Global Change Biology*, the study suggests that ozone has amplified the effects of warmer temperatures in reducing streamflow in forested watersheds in the southeastern United States.

“From previous studies, we know a lot about ozone’s influences on crops and leaves of young trees. However, no studies have investigated the impacts of ozone on water flow in large forested watersheds,” says Ge Sun, research hydrologist with the Forest Service Eastern Forest Environmental Threat Assessment Center “Our studies show that ozone has a possible connection in the reduction of streamflow in late summer when flow is generally lowest, particularly in areas with high ozone levels such as the Appalachian Mountains in the Southeast.”

Researchers developed models based on 18 to 26 years of data and observed streamflow in response to climate and atmospheric chemistry during the growing season. The research team evaluated individual and interactive effects of ozone on late season streamflow for six southeastern forested watersheds ranging in size from 38 acres to more than 3,700 square miles. Estimates of ozone’s influence on streamflow ranged from 7 percent in the area of lowest ozone in West Virginia to 23 percent in the areas of highest exposure in Tennessee.

The findings from this study along with a wide range of previous field studies challenge assumptions derived from small controlled studies that ozone exposure reduces water loss from trees and forests. The present study of mature forests under moderate ozone exposure shows however those ecosystems may react in a different way than can be predicted by short-range, intensive studies.

“We’re predicting that forests under high ozone conditions will use more water instead of less, as was previously assumed,” says Samuel “Sandy” McLaughlin, scientist emeritus from the ORNL Environmental

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Sciences Division. “The concern is that ozone-induced increases in plant water loss could aggravate drought impacts on forests, and reduce the water available for people and stream life dependent on water flow during the dry seasons.”

Forest Service and ORNL scientists also collaborated with researchers from the University of Virginia, Lamont Doherty Observatory, and the University of Gothenburg, Sweden.

Access the article online at <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2012.02787.x/abstract>

## Energy Sector Wood Pellet Manufacturer Chooses N.C.

*International WoodFuels will invest more than \$60M to construct a 300,000 metric ton-per-year wood pellet plant in Wilson County, N.C.*

RALEIGH – Before leaving office, then Gov. Bev Perdue announced that International WoodFuels LLC will construct a 300,000 metric ton-per-year wood pellet plant in Wilson County. The company will create 32 full-time jobs and invest more than \$60 million in Sims over the next three years. The project was made possible in part by a \$100,000 grant from the **One North Carolina Fund**.

“North Carolina has a proud and celebrated history in manufacturing,” said Gov. Perdue. “Manufacturers are locating here because our state’s investments in **education**, **infrastructure** and **workforce development** have created a top-notch business climate.”

International WoodFuels was established in 2007 with the objective to build, own and operate a number of densified pellet fuel manufacturing plants throughout the southeastern US. These plants will supply European coal-fired electric utilities with renewable, low-carbon power generation fuel. The project is also expected to have a long-term, positive impact on the construction, rail and forestry industries.

Salaries will vary by job function, but the average annual payroll for the Sims plant will be in excess of \$1.4 million.

“Our choice of North Carolina was based on exceptional support from local, county and state agencies over the past year,” said Steve Mueller, president of International WoodFuels. “Our company is excited about its selection of Sims for its first plant and we look forward to establishing additional production facilities in North Carolina to meet the increasing demand in Europe for sustainably harvested woody biomass. The combination of plentiful fiber supply, a strong rail network and two exceptional port facilities in North Carolina offers WoodFuels reliable, cost-efficient and long-term resources suited to a multi-decade export business.”

The One NC Fund provides financial assistance, through local governments, to attract business projects

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that will stimulate economic activity and create new jobs in the state. Companies receive no money up front and must meet job creation and investment performance standards to qualify for grant funds. These grants also require and are contingent upon local matches.

“I am pleased that International Woodfuels is opening a facility in Wilson County,” said Senator Buck Newton. “They will find the business-friendly climate and skilled workforce here that they need to thrive.” North Carolina continues to have a top-ranked business climate. Through Gov. Perdue’s JobsNOW initiative, the state works aggressively to create jobs, train and retrain its workforce, and lay the foundation for a strong and sustainable economic future.

Through use of the One NC Fund, more than 65,000 jobs and \$12 billion in investments have been created since 2001. Other partners that helped with this project include: the N.C. Department of Commerce, N.C. State University’s School of Forest Sciences, N.C. Community Colleges, N.C. Ports, Wilson County, Town of Sims and the Wilson Economic Development Council.

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# FIRE

## Take Caution When Burning Yard Debris

**RALEIGH** – The [N.C. Forest Service](#) is urging residents throughout the state to think about safety and exercise caution during the upcoming fire season, which typically lasts statewide mid-March through mid-May. The spring fire season coincides with when many people are getting back into their yards and doing spring cleanup that often includes burning leaves and yard debris.

The N.C. Forest Service encourages anyone considering debris burning to contact the local county forest ranger. There are many factors to consider before burning debris. The forest ranger can offer technical advice and explain what the best options are to help maximize the safety to people, property and the forest.

“Protect our natural resources by acting safely; don't burn on dry, windy days, and maintain a careful watch over a fire until it is extinguished,” said Agriculture Commissioner Steve Troxler.

For people who choose to burn debris, the N.C. Forest Service urges them to adhere to the following tips to protect property and prevent wildfires:

- Make sure you have an approved burning permit, which can be obtained at any N.C. Forest Service office, a county-approved burning permit agent, or online at [www.ncforestservice.gov](http://www.ncforestservice.gov).
- Check with your county fire marshal's office for local laws on burning debris. Some communities allow burning only during specified hours; others forbid it entirely.
- Check the weather. Don't burn if conditions are dry or windy.
- Consider alternatives to burning. Some yard debris such as leaves and grass may be more valuable if composted.
- Only burn natural vegetation from your property. Burning household trash or any other man-made materials is illegal. Trash should be taken to a convenience center.
- Plan burning for the late afternoon when conditions are typically less windy and more humid.
- Be prepared. Use a shovel or hoe to clear a perimeter around the area around where you plan to burn.
- Keep fire tools ready. To control the fire, you will need a hose, bucket, a steel rake and a shovel for tossing dirt on the fire.
- Never use flammable liquids such as kerosene, gasoline or diesel fuel to speed debris burning.
- Stay with your fire until it is completely out. In North Carolina, human carelessness leads to more wildfires than any other cause. In fact, debris burning is the leading cause of wildfires in the state.
- These same tips hold true for campfires and barbecues. Douse burning charcoal briquettes or your campfire thoroughly with water. When soaked, stir the coals and soak them again. Be sure they are out cold and carefully feel to be sure they are extinguished. Never dump hot ashes or coals into a wooded area.
- Burning agriculture residue and forestland litter: In addition to the rules above, a fire line should be plowed around the area to be burned. Large fields should be separated into small plots for burning one at a time. Before doing any burning in a wooded area, contact your county ranger who will weigh all factors, explain them and offer technical advice.

Studies have shown that taking these and other measures can greatly reduce wildfires and the loss of property associated with them. For more information on ways you can prevent wildfires and loss of property log onto [www.ncforestservice.gov](http://www.ncforestservice.gov) and click on the “[fire control and prevention](#)” link.

I am a forest landowner interested in Forest Stewardship on my property. Please have a representative call me.

PLEASE REMOVE THIS PORTION AND MAIL TO: State Stewardship Coordinator, 1616 Mail Service Center, Raleigh, NC 27699-1616

(or contact one of the cooperating agencies listed on this brochure)

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Phone:** \_\_\_\_\_

**County where property is located:** \_\_\_\_\_

**Tract Size:** \_\_\_\_\_ **% Forested** \_\_\_\_\_

Do you have a forest management plan?

YES	NO
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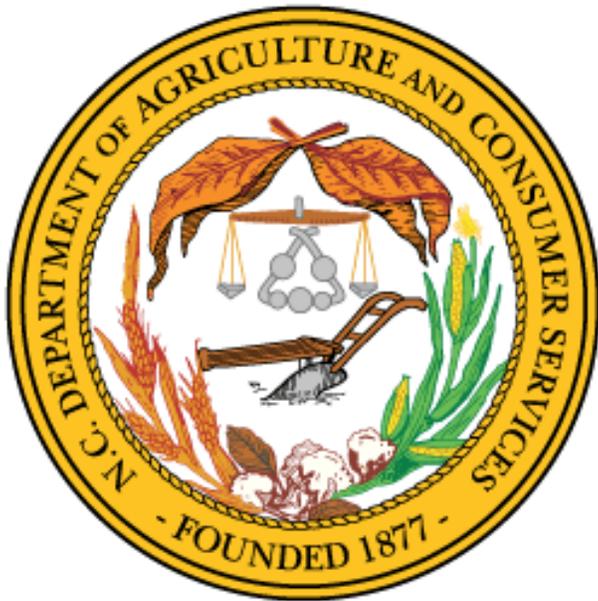
Are you currently receiving technical assistance?

YES	NO	If yes, by whom -
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Organization

I am specifically interested in

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/> aesthetics | <input type="checkbox"/> wildlife      |
| <input type="checkbox"/> recreation | <input type="checkbox"/> timber        |
| <input type="checkbox"/> soil       | <input type="checkbox"/> water quality |
| <input type="checkbox"/> non-game   | <input type="checkbox"/> rare plants   |
| <input type="checkbox"/> species    | <input type="checkbox"/> other         |



For more information on Forest Stewardship in North Carolina fill out the attached form and send to us or contact the N.C. Forest Service Stewardship Coordinator Les Hunter at (919) 857-4833 or via email at [les.hunter@ncagr.gov](mailto:les.hunter@ncagr.gov).