



National Museum of Forest Service History Newsletter

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Celebrating the East's First Experimental Forest

By Stevin M. Westcott

Westcott is the *Press Officer for the U.S. Forest Service, Southern Research Station, Asheville, NC.*

This year, the Forest Service celebrates the centennial of the Nation's Experimental Forests and Ranges. The Southern Research Station (SRS), in Asheville, NC, manages 19 of these 81 living laboratories created to conduct ecological research, make discoveries, and demonstrate research results. Since the early part of the 20th Century, experimental forests and ranges have provided numerous benefits and contributions to the fields of ecology and silviculture. The Station marks the 100th anniversary of these natural treasures with special recognition of the first experimental forest east of the Mississippi River – Bent Creek Experimental Forest.

After World War I, the Forest Service wanted to create an experimental facility in a forest that represented the diversity of the Southern Appalachian Mountains. The Bent Creek area of Western North Carolina, 10 miles outside Asheville, was a logical choice. It typified the upland hardwood forests that spread across much of the region. The Experimental Forest was named for a bend in the creek near the French Broad River.

Bent Creek Experimental Forest was, in part, a product of the new forest science and conservation movement that surfaced in Western North Carolina in the mid- to late-1800s. This movement was largely a response to the "high-grading," unsustainable timber harvesting practices, over-grazing, and other poor land management practices of the late 1800s (and early 1900s) that left vast areas of Southern Appalachia and elsewhere desperately needing rehabilitation and regeneration. In the late 1800s, Carl Schenck and others started the Nation's first forestry school on land near Bent Creek. The forestry school land was owned by George Vanderbilt. He had a great interest in horticulture and silviculture.

In 1925, with help from the federal Bureau of Entomology, the Forest Service set aside 150 acres on the



Fig. 1. Original Bent Creek Laboratory

The Forest Service built several structures at Bent Creek between 1925 and 1927. The original laboratory built in 1925, was demolished in 1976.

Forest Service photograph

Pisgah National Forest for the new research area. Pisgah National Forest consisted of land purchased by the Forest Service from Vanderbilt's estate. The first laboratory building was constructed in 1925 (Fig 1). This was 4 years after the agency established the Appalachian Forest Experiment Station, the facility that would manage Bent Creek and other experimental forests in the Southeast, in Asheville. In 1927, the agency expanded the experimental forest from 150 acres to 1,100 acres. In 1935, the Forest Service allocated an additional 5,200 acres of Pisgah to Bent Creek, bringing the acreage to about 6,300. In the 1940s and 1960s, parts of the experimental forest were removed for recreational use and a major road project, respectively. This brought the total area in the Bent Creek Experimental Forest to 5,500 acres.

The Forest Service established Bent Creek to conduct research on forest regeneration, erosion control, and to demonstrate forest management practices.

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**National Museum of
Forest Service
History**

A Nonprofit Corporation

P.O. Box 2772
Missoula, MT 59806-2772
Phone: 406-541-6374
Fax: 406-541-8733

E-mail:
nationalforest@montana.com

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www.nmfs-history.net

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Membership Categories

Student	\$15
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The President's Report

By Gray Reynolds

The start of a new year is the traditional time to look back on the accomplishments in 2008 and look ahead to the challenges in 2009. In 2008 we accomplished important projects that position the Museum toward the future.

1. Donations passed the \$1.1 million mark.
2. Completed the conceptual interpretive plan for exhibits in January.
3. Completed building design through the Design Development phase.
4. In partnership with the Forest Service, completed the design phase to eliminate floodplain issues on the museum site.
5. Awarded a contract for construction of the sub-grade entrance road and parking area. Construction work will be completed by July 31, 2009.
6. Cataloged 21,000 historical items to date using a museum software database.

Our goal was to begin construction of the museum building in 2009. The changing national financial situation has required the Board to reexamine fundraising strategies. The Board decided to continue fundraising efforts by Board members and Regional Campaign Directors and to explore hiring a professional fundraiser. Max Peterson and I met with a woman recommended by Bob Model on February 12. We were impressed by her professional approach to fundraising and her past accomplishments raising money for several natural resource groups. She is preparing a proposal for the Board to consider in late February.

Another initiative is the Jobs Stimulus Program just approved by Congress and signed by the President. The Missoula Support Committee has made the stimulus proposal available to the Forest Service, Montana Governor Brian Schweitzer, Montana Congressional Delegation, Mayor of Missoula and Missoula County Commissioners. The contract for construction could be ready for advertisement in 90 days if Stimulus funds are received.

In 2009 we will upgrade the Museum web site, complete hauling the timber framing posts (see page 5) to Montana, and support Region 3 efforts to catalog historic artifacts stored in Albuquerque. Jerry Covault, a Forest Service retiree, is carving a small scale prototype of a life size wood statue of a "ranger" which will be located in the Museum lobby.

Increasing member involvement across the country is critical to our success. Members are needed to give talks about Forest Service history or Museum activities, participate on field trips, conduct oral history interviews, and assist the history program of local Forest Service units. We need members to report accomplishments to the Museum office. We need your reports for our annual application to the Combined Federal Campaign.

Here are a few examples of people who are involved. Al West is the Museum liaison to Dan Gosnell who is leading the restoration of the Museum's 1951 Green Hornet Fire Engine in San Bernardino, California. Cherie Cooper is helping with this year's appropriation request to the Montana Delegation to Congress. Brian Leisz, who lives in Troy, MT, is providing guidance and support for timber framing planned for the museum building. Thanks Al, Cherie and Brian.

The time to get involved is now. Ask friends to become members. The more members, the more we can accomplish.

2009 Forest Service Reunion

Join us in celebrating the *2009 Forest Service Reunion, Sept. 7 through Sept. 11, 2009, in Missoula, Montana*. Donations are needed for the Silent Auction—art, crafts, experiences such as guided fishing trip, etc.— send responses now to fsreunion09@gmail.com so the Reunion Committee can plan accordingly. Reunion information will be mailed in April.

Call the Hilton Garden Inn now (1-877-782-9444) to reserve your hotel accommodations. Be sure to ask the desk clerk for the "2009 Forest Service Reunion" block of rooms when making your reservation. Other hotels also available in the area, see the Reunion website for full details <http://2009forestservicereunion.net>

Bent Creek, continued from page 1

Earl H. Frothingham, the first director of the Appalachian Forest Experiment Station, played an important role in establishing the Bent Creek Experimental Forest and guided its research early on.

“Frothingham’s goal was to provide a place to begin a program of silvicultural research in the Southern Appalachians and to bring a fairly large area under management so we could observe problems that need to be researched and then demonstrate results,” said David Loftis, Bent Creek research forester and former project leader. “We’ve tried to fulfill those objectives over the years.”

Early research at Bent Creek focused on rehabilitating and regenerating degraded hardwood stands. Workers divided Bent Creek into dozens of research “compartments” with boundary markers and plans for managing and studying each. Researchers also established 40 plots to conduct research ranging from reforestation planting to the effects of prescribed burning. Scientists tested several types of management practices and maintained records of the costs and returns by compartment. This allowed staffers to determine the economic and silvicultural feasibility of mountain timber production. Besides forest management and timber production, research began on erosion control, insects (southern pine beetle), diseases such as chestnut blight, and a regional fire warning system.

Highly degraded stands were a concern of Forest Service researcher Jesse Buell, who in 1930, installed one of the first clearcuts in the Southern Appalachians that was

solely for research purposes. Buell designed the study to better understand the regeneration of a “high-graded” site. The 6-acre site, known as the “Buell Plot,” is the oldest area at Bent Creek for which detailed data on hardwood regeneration and stand development are available.

Also in 1930, Margaret Stoughton Abell (Fig. 2) joined the staff of the Appalachian Forest Experiment Station becoming the first woman forester in the Forest Service. She conducted numerous studies at Bent Creek.

Like many Forest Service stations across the country, Bent Creek scientists sought methods for preventing and reducing forest fires. Bent Creek scientists developed a fire danger measurement rating system that, by the late 1940s, was used at 420 stations in 24 eastern and southern States. Bent Creek was recognized nationally for its development of a fire visibility meter that has been used across the country.

When the United States mobilized for World War II, research slowed at Bent Creek and staff members conducted field studies on a custodial basis.

While Bent Creek researchers of the mid-20th Century clearly recognized all the benefits that forests offered, timber management practices were a primary concern after the war. Research sites of 100 acres or more were developed to study hardwood stand management. Scientists compared clearcuts to selection cuts, analyzed short vs. long rotation, and studied levels of growing stock and “farm woodland management.” They analyzed tree grades and values, and they studied relationships relative to soils and site, as well as seed-source and growth.

Around 1960, under the leadership of Dr. Charles McGee and later Dr. Don Beck, research at Bent Creek expanded to include studies of resources beyond timber. There was an emerging approach to forest management that all parts of the forest worked together to produce the whole and its array of benefits. Research on growth and yield included effects of thinning on understory plants used by wildlife. Scientists began to analyze how treatments to regenerate oaks affected acorn production, an important wildlife food source.

While Bent Creek scientists studied some artificial regeneration, research on natural regeneration methods dominated the program. Much of the regeneration research turned to even-aged methods, but some uneven-aged hardwood regeneration research continued. Research on smaller plots replaced tests on large-scale sites because larger areas did not provide the detail required to understand site-specific ecology. Regenerating red oak on high-quality sites, growth and yield of yellow-poplar stands, and other long-term studies began.

By the 1960s, researchers began to see that yellow poplars outpaced oaks in the regeneration process. The challenges of regenerating oaks on good or excellent sites



Fig. 2. Margaret Stoughton Abell, the Forest Service’s first woman forester, conducted research at Bent Creek. Circa 1930

Forest Service photograph

See Bent Creek, page 4

became the focal point of most of the regeneration research. Mentors Don Beck and Charles McGee introduced David Loftis (Fig. 3) to the oak regeneration problem when Loftis joined Bent Creek as a graduate student in 1972 and, later, as a full-time employee in 1976. In the 1980s, Loftis studied the effectiveness of shelterwood cuts in regenerating oaks. He subsequently developed REGEN, a regeneration prediction model for the Southern Appalachians.

Early in the 1980s, Henry McNab, a research forester from the Hitchiti Experimental Forest in Georgia, joined Bent Creek. Site classification has been the heart of McNab's research .

The National Register of Historic Places recognized the historical significance of the Bent Creek Experimental Forest when it added its facilities to its list in April 1993. This took place a few years after David Loftis assumed the role of project leader of the SRS research unit housed at Bent Creek. During this period, ecosystem management was the foundation for silvicultural research on upland hardwoods, especially oaks, at Bent Creek. Scientists resurrected artificial regeneration research, particularly with respect to its role in restoration of oak and chestnut communities. Scientists studied the effects of prescribed fire, exotic plants, and diseases on upland hardwood ecosystems.

Katie Greenberg, research ecologist, joined Bent Creek's staff in 1995. She specialized in wildlife research and has analyzed the effects of natural disturbances such as Hurricane Opal, prescribed fire, two-aged harvests and other silvicultural treatments on wildlife populations. She also studies mast and fleshy fruit production as food sources for wildlife. In 2007, she became project leader for the Bent Creek unit. Today, the Bent Creek research unit includes sub-teams in Arkansas, South Carolina, and Tennessee. The unit has positioned itself to work at a regional level, expanding Bent Creek's research on upland hardwood ecosystems beyond its borders.

"Our research work unit is working with the North Carolina Wildlife Resources Commission, the Stevenson Land Company, and other partners to start a new regional study of oak ecosystem sustainability in Missouri, Tennessee, and the Southern Appalachians that is an extension and expansion of David's work," said Greenberg. The study examines the impact of three silvicultural treatments on oak and other hardwood regeneration, plant diversity, wildlife habitat quality, and wildlife populations (birds, bats, small mammals, and herpetofauna) throughout much of the upland hardwood forest ecosystem of the South. The long-term study consists of 120 plots in 20 forest stands covering 250 acres

in each of the three locations.

Research from Bent Creek Experimental Forest has contributed to the health and sustainability of Southern Appalachian forests. It's clear that one of Bent Creek's biggest contributions has been in the area of regeneration and management of Southern Appalachian hardwoods. Additionally, Bent Creek researchers have led the way in ecological classification and in research on hard and soft mast production for wildlife managers. However, it's possible that Bent Creek's most significant legacy could be its long-term data sets, established largely to document growth and yield and regeneration. These volumes of information, used by scientists of yesterday and today, could be key in understanding climate change and other environmental crises facing the United States in the future.



Fig. 3. David Loftis sharing research results with scientists and foresters.

Forest Service photograph

Technology Transfer

For more than 80 years, Bent Creek researchers have shared their knowledge of forestry and research results with fellow scientists, foresters, landowners, and many others. This transfer of technology continues today as Bent Creek foresters conduct an annual upland hardwood silviculture workshop, give individualized tours of forest stands, and develop publications, posters, and numerous other materials to educate the public. In Fig. 3, David Loftis, research forester and former project leader, leads a group of visitors on a tour of Bent Creek.

Timber Framing Posts

In 2008 Museum Helpers volunteered (over 60 people are involved) to acquire 24 posts (12 ft X 11" X 11") that come from lands with ties to the Forest Service. The volunteers agreed to research and write a story about how each tree species was used in the development of the United States – wood products, naval stores, maple syrup etc. The goal is to share and interpret the history of each post in the future museum building. The posts are coming from locations from Alaska to Florida to California and New Hampshire and many points between. The posts have ties to the Forest Service, such as National Forests, Experimental Forests, State Forests, and Tree Farms where State and Private grants have been provided by the Forest Service. The posts will be used for timber framing the lobby.

Watkins-Shepard Trucking of Missoula is picking up the posts and hauling them to Fall Creek Timber Framers in Troy, MT. Brian Leisz, owner of Fall Creek and a museum member, is assisting the Museum in this project. Also thanks to Stephen McCorquodale and Bruce Jackson, B.A.J. Enterprises, for hauling posts to pickup points.



Kisatchie National Forest Bald Cypress— from left, Mike Dawson, District Ranger; Peter Michaelson, Forestry Tech.; Steve McCorquodale, FS retired; Jonathan O'Gorman; Forestry Tech.; Nathan Miller, Forestry Tech.; and Marion Dodd, Forestry Tech. All except McCorquodale are from the Kisatchie Ranger District, Provencal , LA.

Steve McCorquodale Photograph



New Hampshire Tree Farm Red Spruce Tom Thompson cutting Red Spruce for a museum post on his Tree Farm, Orford, NH.

Photograph Courtesy Tom Thompson



Chequamegon-Nicolet National Forest White Pine
Brian Seago of Mason, WI saws white pine on log on his portable mill. See the Museum website for a newspaper article on the Wisconsin effort to obtain the post.

Pat Seago Photograph

Road Contract Awarded

We awarded a contract to Nelcon, Inc. of Missoula Montana to construct the sub-grade museum entrance road, Bungalow Cul-De-Sac and parking lot for \$90,416. A Forest Service grant will pay for the construction. The sub-grade construction consists of a geotextile fabric, beneath a 12" layer of 3" minus rock. Following museum building construction, the road will be completed by adding a 4" layer of 3/4" minus base, 3" asphalt, curbs and a light fixture. Capacity of the parking lot is 37 cars and 10 buses/RVs. The sub-grade road project will be completed by July 31, 2009.

Welcome New Members

11/14/2008 to 2/20/2009

Craig Bobzien
Paul Bradford
Dave Davies
Sharon Friedman
Corbin & Erin Newman

Robert Olson
Justin Rowland
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Stony Stoddall

New Life Members

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Terry Forest, DJ&A Engineers
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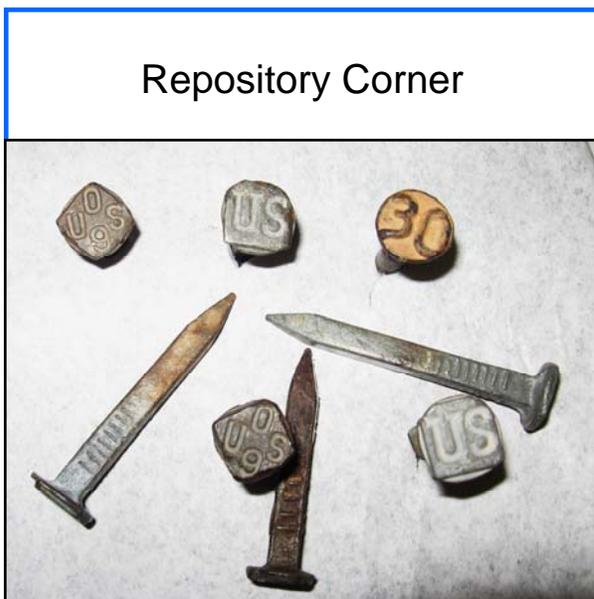
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Please pay pledges by December 31, 2011

Gifts and pledges may be paid by cash/check or by gifting securities (stocks and bonds). For securities, please call the Museum Office (406 541-6374) or write the Museum Office for transfer instructions. In accordance with IRS regulations, **your gift is fully tax-deductible.**

All persons donating will be recognized in a commemorative booklet available at the Museum. Donors giving \$1,000 or more will be recognized in the Museum lobby on the Wall of Honor.



Repository Corner

**Capital Campaign
Gifts**

As of 1/31/2009

\$10 Million Goal

<i>CATEGORY</i>	<i>AMOUNT</i>
Members & Friends	\$ 389,480
Pledge Balance	64,850
Organizations	114,000
Foundations	20,000
Government	525,000
In-Kind Gifts	29,007
Endowments	32,189
TOTAL	\$ 1,174,526

Tree Marking and Railroad Tie Nails In the 1910s and until the late 1930s, the Rocky Mountain Region (Region 2) of the Forest Service used a short, heavy nail with "US" letters on a flat, round head to indicate a tree marked for cutting. These marking nails were inspired by somewhat similar nails known as "date nails" used by railroads to indicate the year of installation of a given railroad tie.

Nails in the Museum collection are from the Shoshone and Medicine Bow National Forests in Wyoming and the White River National Forest in Colorado. Length of the "US" nail is 2.45".

For the complete story, written by Ed Heilman for the 1992 and 1993 Newsletters, see the Museum website www.nmfs-history.net.



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P.O. Box 2772
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And Inspire The Future**