# Annual Report
of the
# L-A-D Foundation

***September 2009***

***"Incorporated in 1962, L-A-D Foundation is a Missouri private operating foundation dedicated to sustainable forest management, protection of exemplary natural and cultural areas in Missouri, and providing support and advocacy for projects and policies which have a positive influence in the Missouri Ozark region."***

Leo Drey began acquisition of forest land in the Missouri Ozarks in 1951. The name Pioneer Forest was originated by Pioneer Cooperage Company of St. Louis and in 1948, it was sold to National Distillers Products Corporation, and the forest renamed Seton Porter Forest. Then in 1954 Leo Drey purchased all of the land, added it to the forest land he already owned, and renamed it all Pioneer Forest. In 1962, Leo Drey founded the L-A-D Foundation primarily to hold and protect areas of outstanding natural or cultural resource value in the Missouri Ozarks. In 2004, Leo Drey donated Pioneer Forest, as a limited liability corporation, to the L-A-D Foundation to be managed as it had been for 50 years, as an exemplary model of conservative single-tree selection forestry.

# ANNUAL REPORT

## *of the L-A-D Foundation* *September 2009*

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**COVER PHOTO**: Looking through the crown of one of Pioneer's veteran shortleaf pine at the Randolph Tract. Photo by Jason Green

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**L-A-D Foundation**

Chairman Leo Drey
PHOTO BY LAURI DREY

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# From the President

This year, 2009, has been marked by two rare and important challenges. The first was a weather event unique in the memory of any of our staff. In early May, Southern Missouri, including approximately 22,000 acres of Pioneer Forest, were struck by what the National Weather Service classified as a "derecho" (long-lived, violent, convectively induced straight-line windstorm). The effects have been widespread. On Pioneer it left millions of board feet of downed timber.

Pioneer staff responded immediately. Existing cutting crews were moved to salvage operations and many other crews were recruited. We hope that timber markets will be sustained through the current economic fluctuation. We also expect that over the course of the next year we will have completed salvage work and can return to single-tree marking in the Pioneer style.

The second challenge has been Ozark National Scenic Riverways. Our most important neighbor is the National Park Service, in its capacity as steward of the Riverways. There has been a growing pattern of abuse on the rivers and evidence of pressure for this destructive pattern to continue. If the national park is to remain intact, this downward spiral must be reversed. One opportunity to start such a recovery is with the National Park Service's process to prepare a new General Management Plan for the Riverways. The Foundation is committed to help in any way that we can to restore the natural integrity of this beautiful spring-fed river corridor, its peaceful use, and its economic value for local communities.

On the Forest, as we begin work to maintain some of our best native shortleaf pine sites, we are also shaping a good future for the Virgin Pine area along Highway 19. This site was first acquired in 1936 by the Missouri Highway Department to protect its large, old pine and the open, scenic landscape on this high ridge above the Current River. Later, Highway 19 became Missouri's first Scenic Highway. This area and the adjacent Randolph Tract are among our best and very few remaining Ozark pineries. The L-A-D Foundation acquired the Virgin Pine site from the Highway Department in 1996 and began restoring this site as a more open woodland for the benefit of the remaining old pine.

Pioneer also has other small, scattered areas of maturing shortleaf pine. On these sites we are developing management favorable for these native trees. Prescribed fire in small areas, carefully and occasionally conducted, will become part of that management. Our first controlled burn was conducted this spring; it was successful and productive. Our thanks to the Nature Conservancy for their assistance with this effort.

Pioneer also has other developments described in this 2009 Report. I hope that you take pride in the good work of our Foundation, its staff, and board.

John Karel

L-A-D Foundation

**PIONEER FOREST MANAGEMENT**
LAND CONSOLIDATION
RESEARCH
EDUCATION AND OUTREACH
RECREATION AND NATURAL AREAS
GRANTMAKING
PUBLIC POLICY ISSUES
ADMINISTRATIVE ISSUES

# Pioneer Forest Management

*Ron Harper*
PHOTO BY Greg Iffrig

Leo Drey established Pioneer Forest in 1951 with the philosophy that conservative, sustainable management and single tree selection will maintain and improve the forest while providing a multitude of benefits for those who enjoy and depend upon these resources. All of our management, recreation, outreach, and education efforts are guided by this underlying principle.

## MAY STORM DAMAGE

The storm that occurred on May 8, 2009 caused significant damage to several tracts on Pioneer Forest. Many factors contributed to this damage. First, much of the area sustained straight line winds in excess of 60-90 miles per hour. Secondly, the ground was very soft due to saturation from prior rain. Trees also had full crowns which can act as a sail, catching the wind. The Cedar Grove, Akers Ferry, and Shannondale areas were hit particularly hard. During this storm, a tornado started in the Leatherwood Tract and skipped northeast through the Roger Pryor Pioneer Backcountry. The tornado then pulled together and stayed on the ground east of Blair Creek and extended across Logan Creek and through Dry Valley north of Ellington. From Logan through Dry Valley, the tornado left a swath of timber one-quarter to one-half mile wide that was completely twisted and blown down.

We immediately shifted our six regular crews off of marked timber to begin salvaging blowdown timber. Other loggers also called the Pioneer office to inquire about our blowdown timber. We quickly added 13 logging crews realizing that it may take the Missouri Department of Conservation (MDC) and the US Forest Service weeks

***Images of storm damage on Pioneer Forest lands.***
**PHOTOS BY Greg Iffrig**

or even months to evaluate and release their timber on the market. We set our price at $125 per thousand board feet, which is about half of what most sawmills were typically paying ($240-$250/thousand board feet) for sawlogs. The MDC has made a few sales ranging from $25-$126/MBF, however, we have not lost a crew to an MDC sale to date. We hope to maintain the present price and a steady harvest of salvage timber.

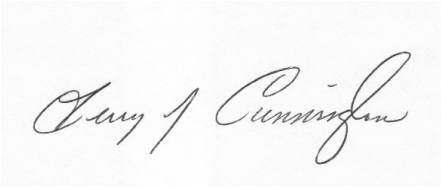
It is still unclear how the timber market will respond to salvage operations in the Ozarks. Railway cross-tie markets remain strong but do show some signs of slipping. All other forest product markets remain poor.

## RESULTS OF PIONEER'S HARVEST

During Pioneer's fiscal year (July 2008 – June 2009), we harvested 7.24 million board feet of timber. 5.5 million board feet of this was marked timber, which was harvested before the storm occurred. We had projected a harvest of 7 million board feet for the fiscal year. However, the salvage of wind-thrown timber increased the volume that is being harvested on Pioneer Forest.

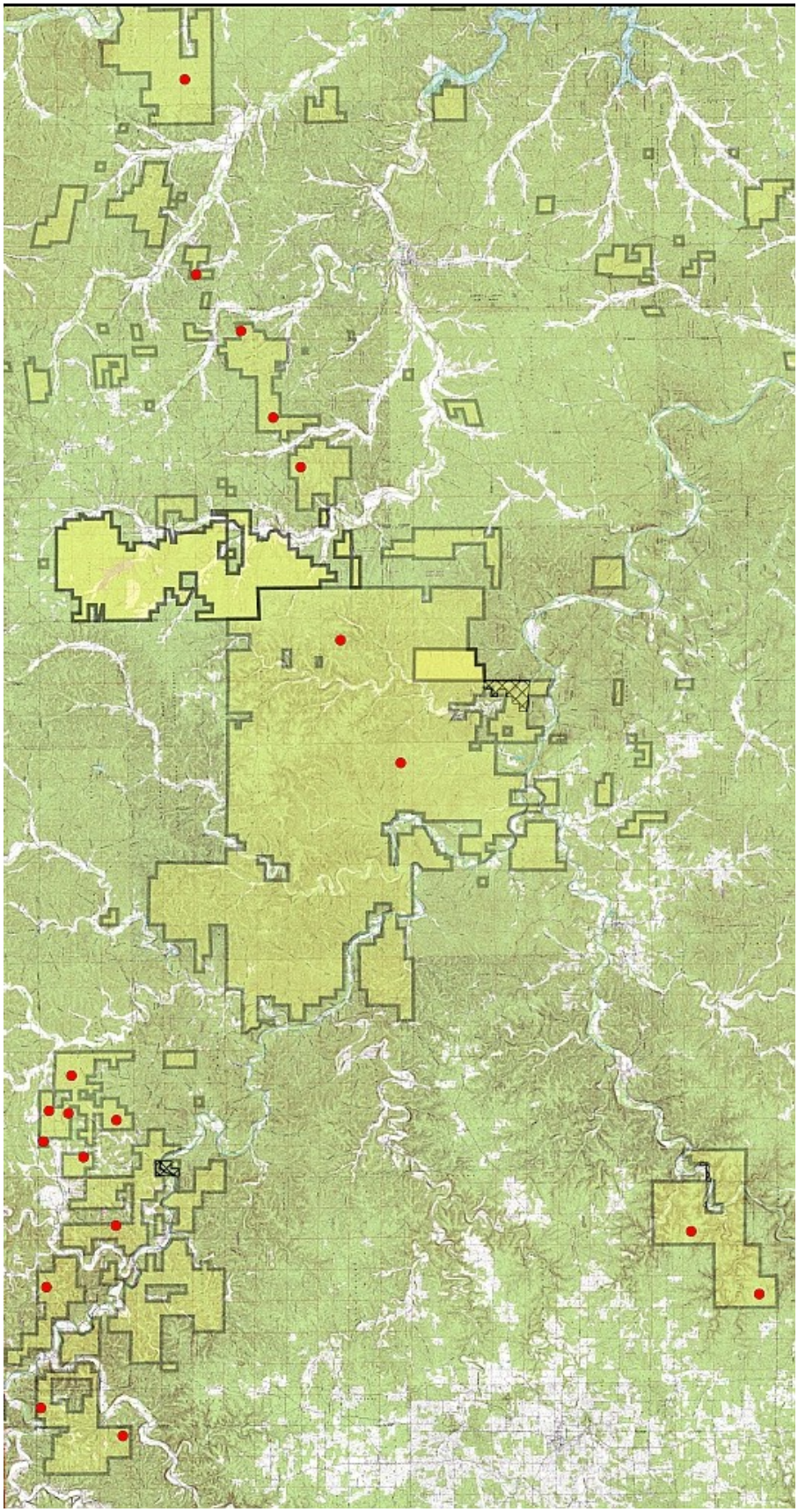
The storm affected several thousand acres on Pioneer. The increase in the number of logging crews has allowed us to salvage more than 5 million board feet since May. We expect the salvage operations to continue for 12-18 months, depending on markets and quality of the blowdown timber.

Our projected cut for the calendar year (January 2009 – December 2009) is 11 million board feet. However, we are still harvesting well below the 16 million board feet grown annually. The storm could have several impacts on future management of the forest. First of all, the next inventory in 2012 will likely show that growth (change in bf/acre/year), and volume on the forest may decrease due to substantial losses in affected areas. Second, for areas that suffered moderate to severe damage, we may delay the cutting cycle while we wait for young timber to grow into the sawlog class.



*"We had 57 foresters and a few forest industry (professionals) attend the tour (Spring Missouri Society of American Foresters Technical Meeting) of Pioneer Forest LAD lands. I heard many positive comments from attendees, and I believe many eyes were opened on the potential of uneven-aged forest management. How can you deny the results on Pioneer?"*

**Tom A. Draper**
**Regional Forester**
**Missouri Department of Conservation**
**Letter to John Karel, June 2009**



*Locations of timber sale areas on Pioneer Forest during the past year are shown here with red dots.*

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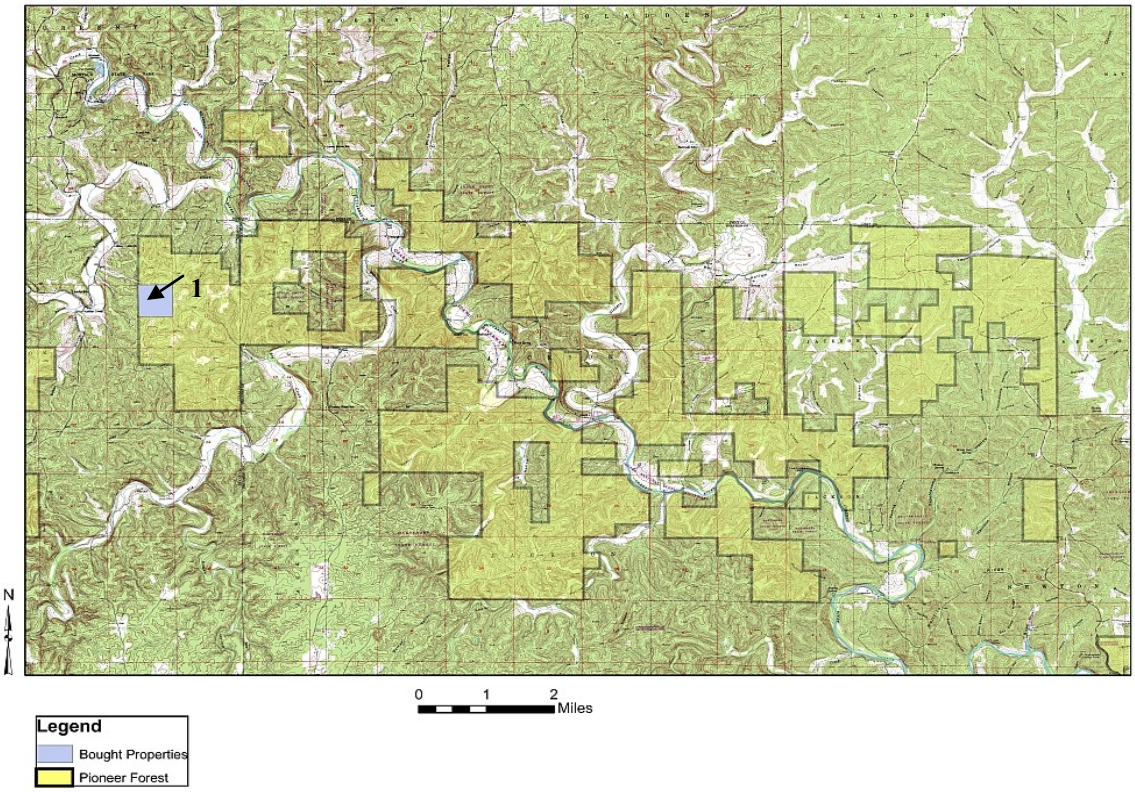
# Land Consolidation

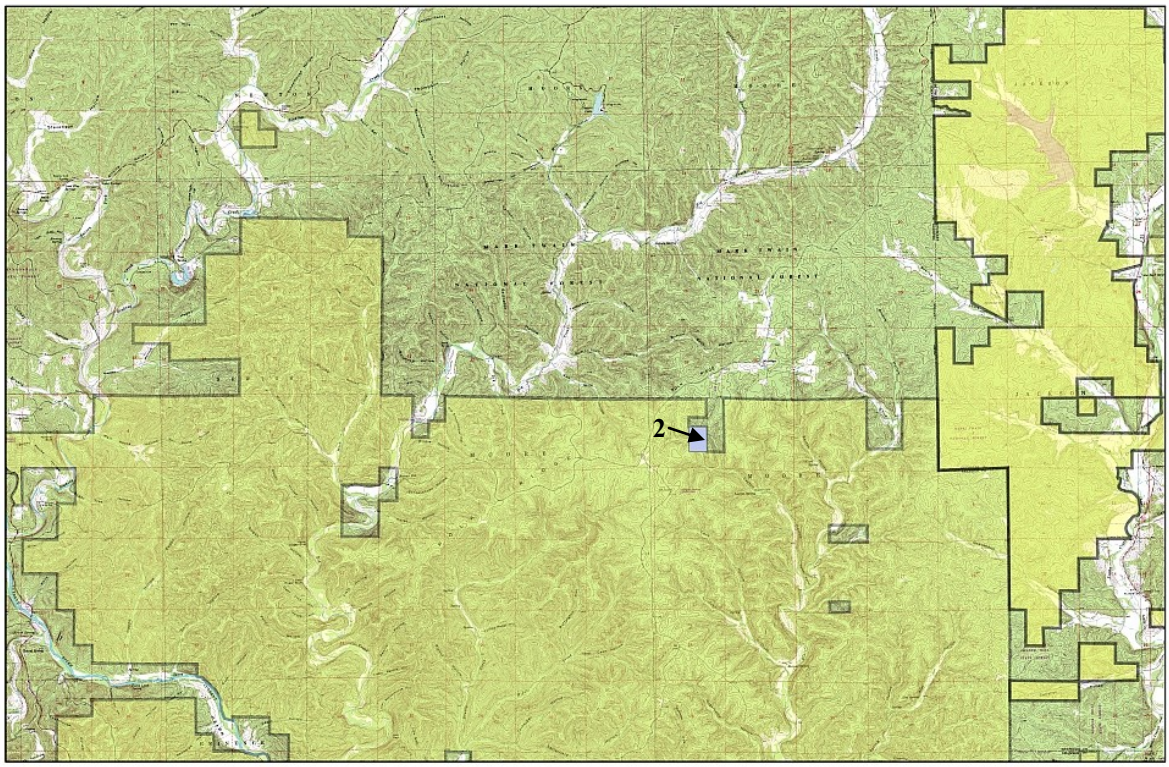
*Purchased 11 acres, Horseshoe Bend*
PHOTO BY Greg Iffrig

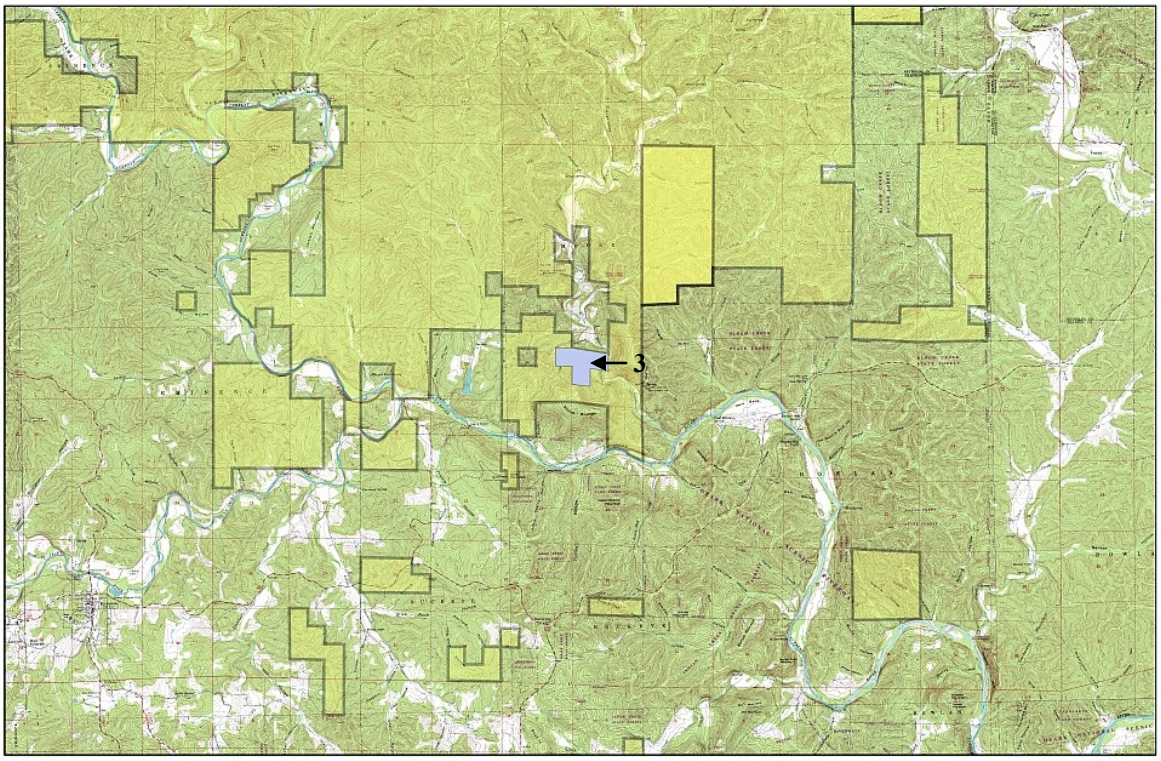
## PURCHASED LANDS

During the past year, three parcels were purchased for Pioneer Forest LLC and are shown here in blue on this and the following page:

1. 160 acres acquired from the Nature Conservancy in December 2008 in Northeast Quarter, Section 11, Township 31 North, Range 7 West
2. 20 acres acquired from Dan Skaggs in September 2009 in the South Half, Northwest Southeast Section 2, Township 30 North, Range 3 West
3. 160 acres acquired from Virginia Monforte in December 2008 in Northeast Quarter, Section 11, South Half, and Northwest Quarter, and Northwest Southeast Quarter, Section 12, Township 29 North, Range 3 West



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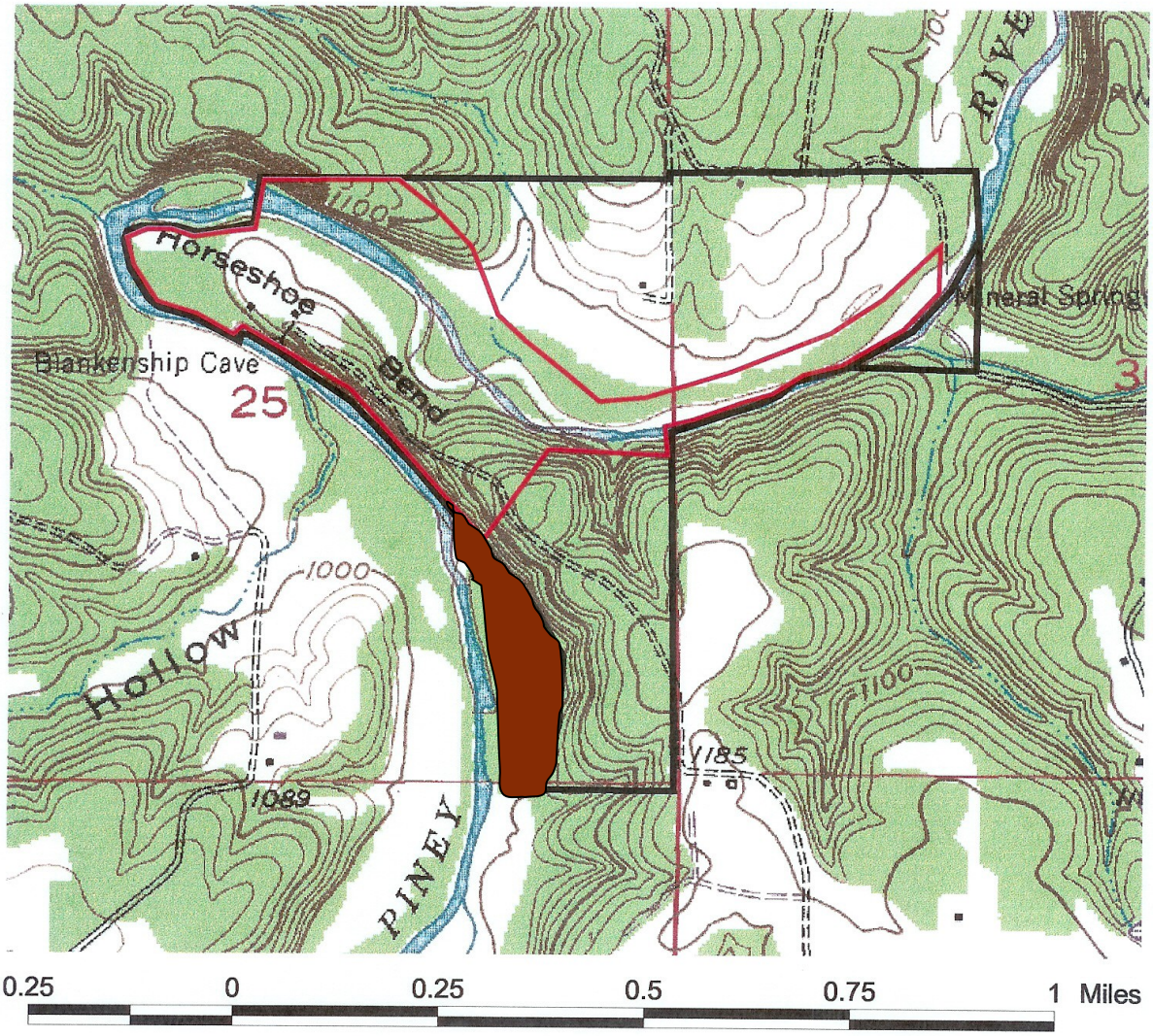
**Legend**

Bought Properties

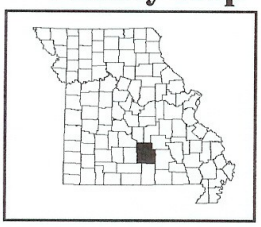
Pioneer Forest

# Horseshoe Bend

## Texas County - Houston Quad




**Vicinity Map**



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**Natural Area, 86 Acres**

**L-A-D Land, Leased by MDC**

**11-acre L-A-D Acquisition**

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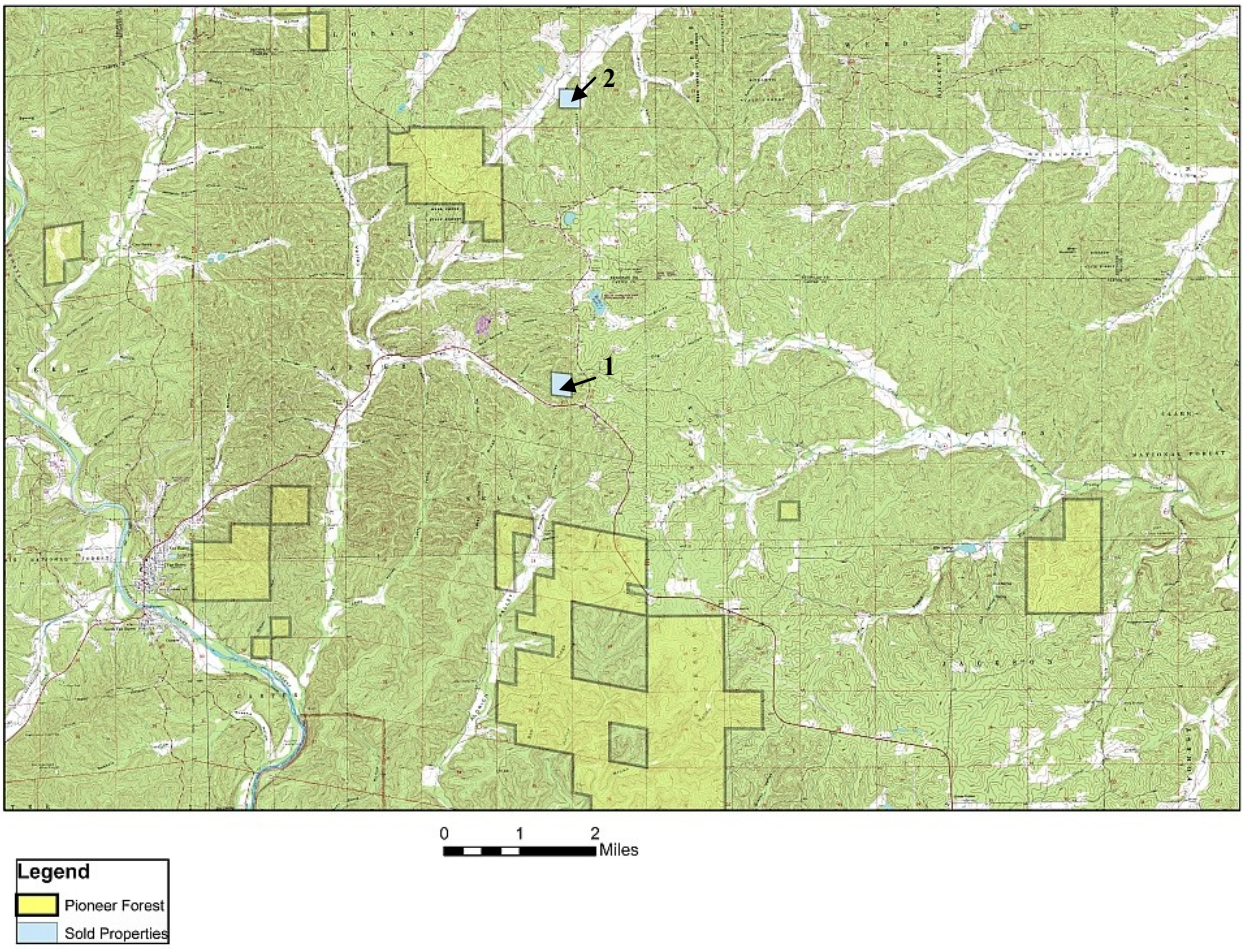
Shown here is the 11- acre addition to the Foundation's Horseshoe Bend in Texas County This new, adjoining land adds approximately one-quarter mile of Piney River frontage.

## LANDS SOLD FOR CONSOLIDATION OF PIONEER FOREST

Pioneer sold two pieces of land during the past year. These were smaller pieces, located away from Pioneer land, and were difficult to manage. Funds from these sales are earmarked to use for acquisition of lands within the forest or immediately adjacent, and which are desirable for long-term management.

The sold pieces are:

1. 40 acres sold to Kennedy in Section 2, Township 27 North, Range 1 East
2. 30 acres sold to Sander in Section 23, Township 28 North, Range 1 East



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# Research

*Ted Heisel and Leon Cambre*
PHOTO BY Jason Green

## MANAGING FOR PINE FORESTS

Once there were many upland pine forest areas in the Current River watershed. There are far fewer today and such species as red-cockaded woodpecker and brown-headed nuthatch that once depended on these native forests have disappeared. The Virgin Pine along Highway 19 is a highly visible example of these pine forest remnants and one of Missouri's most historically important pine places.

We are studying what role Pioneer will play in restoring other small areas of native shortleaf pine on the forest, to continue to have them remain an important part of this Current River region.

## DATA COLLECTION AND MANAGEMENT

*Institute of Botanical Training*. In early October 2008 Justin and Dana Thomas of the Institute of Botanical Training in Salem, Missouri, conducted a baseline Forest Vegetation Analysis within a pine-dominated portion of Pioneer's Randolph tract. This project establishes an initial data-set from which staff can assess the success or failure of subsequent efforts to restore our piney woods. Their report, "Vegetation Analysis of Shortleaf Pine Stands Within Pioneer Forest's Randolph Tract —2008," was submitted in April of this year.

Six plot locations were established and marked and then four were sampled. The information gathered included the variety of plant species and their relative importance within the groundcover, understory, and overstory. Also included was an assessment of floristic quality and photo-monitoring.

*Forests of the Ozark region look much different today than they did 200 years ago. That's largely due to a decrease in the number of shortleaf pine, Missouri's only native pine.*

*At the time of early European settlement, Missouri, particularly in the Ozark region, had an estimated 6.6 million acres of shortleaf pine. Today, shortleaf pines occupy only about 500,000 acres, a net loss of about 6.1 million acres. Their decrease brought major changes to the appearance and the ecology of the forests they once dominated.*

**Mike Stambaugh and Rose-Marie Muzika**
**"Pining for the Dwindling Pine"**
***Missouri Conservationist*, December, 2001**

The species inventory from this project resulted in 184 vascular plant species, with several herbaceous plants that are common to pine forests and woodlands. While this is encouraging, there are other indications of what must happen as we plan for our management into the future.

*Justin Thomas documenting one of the data plots from a Fall 2008 study on Pioneer Forest.*
PHOTO BY Institute of Botanical Training

The overstory data showed that shortleaf pine dominates. This highly visible component of widely scattered and large diameter (200-year-old, 25-30 inch) individual trees along with a healthy and dominant pine overstory of smaller diameter (60-year-old, 12+ inch) trees commands the attention of those who visit. The disappointing observation is that "there is a complete lack of recruitment of pine at the site"(from the report). Other research has indicated that for shortleaf pine to flourish here, we must allow more sunlight through the forest and to the floor; and on occasion, expose bare soil to serve as the seedbed for successful pine seed germination. This will allow pine seedlings and saplings to grow healthy enough to maintain the species as dominant in the canopy for multiple generations.

A total of 72 groundcover species were recorded, with woody species dominating. Pine was at the bottom of this list. We would have expected more non-woody herbaceous species to be found within a healthier pinery. With respect to the relative importance of the top 20 groundcover species, only three are herbaceous. Despite these low numbers, this study concluded that across the site there is an adequate diversity of plants on hand for successful restoration.

*Pioneer Forest Pine Management Efforts.* Over many years, Pioneer has thinned pine (for post and pole products) through this same area of the forest. This earlier work has contributed significantly to the piney woods character. Now more recently, Pioneer also has developed a set of conditions for reducing leaf litter. We realized that we could use time to our advantage. The present condition developed over decades, and gradual change back to earlier conditions would work best. Progressively modifying conditions lends Pioneer's distinctive flavor of management. That is, periodically and carefully applying conservative management achieves steady, sustainable, and successful results over time. Such an approach will prevent shock to the forest and reduce or eliminate overstory mortality (especially for the old, solitary pine soldiers we wish to secure on site for as long as possible).

The initial project is a 50-60 acre ridge on Pioneer's Randolph Tract. Manually removing thin layers of the leaf litter is not possible. Motorized equipment could not provide the care or control we were seeking. Controlled burning presented several challenges. In order to conduct a safe controlled burn and consider that a success, Pioneer would require perfect conditions for a cool, moist burn. This would achieve a removal of only a thin layer of the leaf litter. It was a set of conditions not typical for this type of work as practiced in Missouri woods.

The Nature Conservancy agreed to help by offering labor and equipment. As they made preparations, we watched for the right conditions. During the intervening months, there were many conversations between Pioneer and the Conservancy. During the first attempt to burn, both Pioneer and the Conservancy were quick to realize that circumstances were not right. That burn was called off. The experience further narrowed the set of conditions everyone deemed to be absolutely necessary and established Pioneer's confidence that whenever it was possible it would work well.

*March 25, 2009 controlled burn conducted on Pioneer Forest, showing here the incomplete nature of the burn and the resulting mosaic across the forest floor.*
PHOTO BY Jason Green

Several weeks later, on the day after a rain, the Conservancy called for another attempt and the controlled burn was conducted without incident. It was not complete; the results only removed a very thin layer of leaf litter, perhaps the accumulation of one year, but Pioneer's staff was pleased.

This project is one part of Pioneer's long-term goal that Leo began in the 1950s, to restore Ozark forests which had been diminished by abuse and overcutting. Pioneer is a reference/ research forest where sustainable forestry is demonstrated; in fact, Pioneer's old growth white oak, eastern red cedar, and shortleaf pine areas are all keystone places which complement and reinforce our understanding of the capability of native Ozark forests. It is our hope that careful management patiently applied can allow forests of all types to flourish in the Ozarks.

## University of Missouri

Senior Tom Nelke, Forestry major of the University of Missouri, Columbia established a baseline set of data for pine sapling counts, along with a measure of leaf litter depth at the Randolph Tract. He installed 12 permanent plots within the burn unit that will allow us to monitor overstory species composition, overstory density, and changes in duff/ litter layer thickness. These data will be useful in monitoring the changes that occur as we continue our conservative burn and management approach for this area.

## Flying W Cave, University of Tennessee, Knoxville

Ph.D. student Matthew Niemiller began work late last year on the Ambliopsidae, a small family of fish found only in the unglaciated region of the eastern US. Flying W Cave, owned by the L-A-D Foundation, is one of the study sites. This study seeks more information about subterranean diversity and the evolution and speciation among six species (five genera) of these small cave-dwelling fish.

## Cave Management on Pioneer Forest

Pioneer Forest and the L-A-D Foundation are fortunate to have 143 known caves on our properties. Most of these have been visited and located with a GPS system. We also have data provided by the Cave Research Foundation (CRF) that allow us to map our caves with ArcView software. Scott House from the CRF presented recommendations for our cave management on Pioneer Forest/L-A-D lands. They include developing a cave classification system, writing prescriptions for caves, developing management plans, and monitoring.

The white-nose syndrome (WNS) continues to be a major concern for bats, especially in the northeast United States. This fungus is not well understood, but is killing bats at an alarming rate. The mechanism for the spread of WNS is still not understood, but most evidence suggests that transmission occurs from bat to bat. However, humans may also serve as a vector by introducing it inadvertently into the cave via clothes and caving gear. In some instances, entire hibernacula have been decimated. Affected bats often display unusual behavior, such as flying when temperatures are still below freezing; clustering near entrances of hibernacula; the accumulation of dead or dying bats on the ground, or on buildings or trees; and/or a white fungus on the bat's nose, ears, or wings (ONSR WNS brochure). Many affected bats also suffer from abnormally low weight, little or no fat reserves for hibernation, and/or severe dehydration. Pioneer Forest has closed visitation to the public to its three gated caves where bat hibernacula are found (Cookstove Cave, Medlock Cave, and Holmes Hollow Cave) as a precautionary measure for the duration while the white-nose syndrome continues to move westward.

*Installing the gate at Cookstove Cave on Pioneer Forest, Shannon County.* PHOTO BY Scott House

# Education and Outreach

*Pioneer Group searching for large white pine at Menominee Forest*
PHOTO BY Greg Iffrig

## Pioneer Visit to Menominee Forest and Aldo Leopold Foundation

In October of last year, Board member Susan Flader, retired Forest Manager Clint Trammel, and staff members Terry Cunningham, Greg Iffrig, and Jason Green traveled to Wisconsin to visit the Menominee Forest in Keshena and the Aldo Leopold Foundation in Baraboo.

Menominee Forest is owned by the Menominee Indian tribe of Wisconsin. The tribe is federally recognized as a sovereign nation. The opportunity to see and discuss similarities of this forest's monitoring and management with Pioneer had been discussed for a number of years and inspired this visit. Menominee Forest uses a continuous forest inventory (CFI) similar to Pioneer's. The forest is older, dating back to 1854, and larger at more than 200,000 acres. Most of this forest is managed using uneven-aged management techniques. Pioneer staff remarked when seeing the first example of cutting that the Menominee method of single-tree selection cutting produced a forest with a remarkably Pioneer-like look and feel.

*Steve Swinson explaining restoration management of bottomland hardwoods along the Wisconsin River*
PHOTO BY Greg Iffrig

The second stop on the trip was the Aldo Leopold Foundation where Executive Director Buddy Huffaker and Ecologist Steve Swinson coordinated our visit and tour. In the Aldo Leopold Center, our combined group began with a discussion led by Terry Cunningham and Steve Swinson. Then we toured the building, learning about its energy-producing design and the materials from on-site that were used during construction. Various sites were toured that included the restoration and management of woodlands, prairies and forests; the Leopold Farm, Leopold Shack, and the nearby Wisconsin River, where we were all inspired when sandhill cranes dropped down onto gravel bars across the river.

## VISITS TO PIONEER, TOURS, AND OUTREACH

There were several tours of Pioneer Forest throughout the past year.

Wellington B. Huffaker and Stanley Temple of the Aldo Leopold Foundation. Executive Director Wellington Huffaker and Board member Stanley Temple of the Aldo Leopold Foundation visited Pioneer Forest on separate occasions in July 2009. Mr. Huffaker reported that he was very impressed with Pioneer's operation and would be interested in working together on a forest management handbook for landowners. Stanley Temple is a Senior Fellow with the Leopold Foundation and is a professor emeritus of the Wildlife Biology Department at the University of Wisconsin-Madison.

Vichu Menon of St. Louis. Mr. Menon is an engineer who is interested in uneven-aged management. He toured Pioneer Forest in the spring of 2009, met with staff, visited the St. Louis office, and has met with President Karel as well.

Southeast Missouri State University. Alan Journet and ten students from the Biology Department of Southeast Missouri State University toured Pioneer Forest in April 2009.

Society of American Foresters. In May 2009, as part of a workshop on uneven-aged management, a group of 60 people toured Pioneer Forest to learn about Pioneer's operations.

University of Missouri Forestry Department. Dr. John Dwyer, Associate Professor of the University of Missouri Forestry Department, brought a group of 12 forestry summer camp students to tour Pioneer Forest in May 2009.

National Network of Forest Practitioners. Also in May, a group of 20 members from the National Network of Forest Practitioners toured Pioneer Forest during their Annual Meeting.

Veneer Study with Consulting Foresters. Terry Cunningham contracted with Consulting Foresters Scott Brundage, Fred Crouse, and Gunther Rodatz to conduct a veneer study with Pioneer Forest staff March 2009. The meeting was held on Pioneer land and included discussions on identifying veneer quality hardwoods.

*Pioneer Intern Tom Nelke enjoying the view from Bee Bluff.*
PHOTO BY Jason Green

The College School, Webster Groves, Missouri. Students from the College School of Webster Groves, Missouri, visited Pioneer and the Cookstove Cave area in April.

## INTERNSHIP

In July of 2009, we were fortunate to have a forestry student named Tom Nelke from the University of Missouri-Columbia participate in a University-sponsored internship. While at Pioneer Forest, Tom was a significant help in assisting with the relocation of

our boundary lines in areas that were hardest hit by the May storm. He also spent some time learning timber sale administration and the general timber-marking protocol.

## Forest Stewardship Council Certification

On May 14, L-A-D and Pioneer participated in the Architectural Woodworking Institute's Green Products Symposium. The Symposium was held at the William A. Kerr Foundation building, located in downtown St. Louis, near the riverfront. This was our second year participating and we set up a booth with FSC brochures, flooring samples, and additional information on Pioneer. Many people inquired about the availability of our FSC lumber.


*Portable display of Pioneer Forest flooring and FSC-Certification borrowed from the EarthWays Center, St. Louis*
PHOTO BY Greg Iffrig

Currently, FSC flooring is available for purchase through Smith Flooring in Mountain View, Missouri, and Classic Wood Flooring in Springfield, Missouri. St. Louis green builder, Sage Homebuilders, has purchased our FSC flooring for some of their projects. We have also received phone calls from other area builders.

We are seeking FSC-Certification for Pioneer Forest Lumber LLC through a marketing cooperative known as Woodnet. This is an organization of other producers and offers reduced certification costs. With this in place, we will be able to offer lumber and wood products that are FSC-Certified and 100% Pioneer Produced.

## Midwest Forest Industry Show

Terry Cunningham and Steve Spencer participated in the Midwest Forest Industry Show held in Cape Girardeau on June 27, 2009. The show has a 40-year history and features seminars and demonstrations of sawmill machinery, logging equipment, and more.

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*Clifty Creek Natural Bridge*
PHOTO BY Greg Iffrig

# Recreation and Natural Areas

## VIRGIN PINE, SHANNON COUNTY

We are in the second season following the cutting and removal of woody and mostly non-pine stems (trees). Our goal is to maintain this open condition beneath the large, old pine trees. The cut saplings and poles have begun to lose their limbs and fall to the ground, and in another year or two, they will begin to disappear altogether.

*Members of Boy Scout Troop 496, McKinney, Texas preparing for a morning of tread restoration on the Virgin Pine Walk*

We replaced the engraved wooden sign and the wooden brochure box along Highway 19 this year. We also have completed other work at the Virgin Pine Walk/Pioneer Forest Interpretive Drive. The Virgin Pine Walk had almost disappeared because of the overburden of cut stems from the clearing of two years ago. Where these were blocking the trail, we now have cut and removed them. Earlier this summer, we were able to use a Boy Scout crew visiting from Texas to restore the trail tread and re-open the walking path. We hope to have this site back in good condition before fall.

## AREAS UNDER SPECIAL MANAGEMENT AGREEMENT

The Roger Pryor Pioneer Backcountry and two other properties--Dillard Mill State Historic Site and Grand Gulf State Park--are under lease agreements with the Missouri Department of

Natural Resources. All have staff, either on-site or nearby. The Foundation also has leased seven other properties for management to the Missouri Department of Conservation: Ball Mill, Clifty Creek, Dripping Springs, Hickory Canyons, Horseshoe Bend, Piney River Narrows, and Rocky Hollow. Each of these latter properties has all or some portion designated as a Missouri Natural Areas. The Foundation also cooperates in the listing and management of four other sites registered as units of the Missouri Natural Areas system. These are Current River, Lily Pond, Pioneer, and Triple Sink. A table in the appendices provides more detail and the chronology for each.

*Parking at Himont Trailhead, which provides access to Laxton Hollow Trail and Brushy Creek Trail.*
PHOTO BY Greg Iffrig

***Roger Pryor Pioneer Backcountry.*** The management and oversight agreement with MDNR of the Roger Pryor Pioneer Backcountry allows Pioneer Forest to continue management of the forest resource associated with this property, while at the same time, making the recreation resources of this expansive 61,000 acre tract available to the public (including access, trails, trailhead maintenance, construction, and law enforcement). Their management is all conducted by the MDNR Division of State Parks.

The Backcountry is to be managed with the nearby Current River State Park (see map p.34), which is under development. That facility has its first appointed Superintendent, James Newberry, formerly employed at Washington State Park. Also at Current River State Park is the law enforcement position which had been created some years ago for the Backcountry. In the short term, this officer has been assigned duties at Montauk State Park, as well as at the Backcountry, but we hope for more regular duty at the Backcountry again soon.

The Backcountry also has had two State Park maintenance personnel who have assisted in some aspects of the area's development. These positions were originally assigned to the Backcountry through Johnson's Shut-In State Park. Since the collapse of the Taum Sauk reservoir (2005), its subsequent reconstruction, and now the severe May windstorm damage, both positions have been used primarily for ongoing work at the Shut-Ins but have continued trailhead maintenance and mowing at the Backcountry.

In addition to our Himont Trailhead, the following trails have also been developed: Blair Creek Section of the Ozark Trail (approx. 13 miles), Laxton Hollow Trail (approx. 2 miles), and the Brushy Creek Trail (approx. 12 miles). We also have proposed construction of the (approximately 12 mile) Current River Trail which would connect the Brushy Creek Trail with Round Spring and continue through the Backcountry and across portions of Ozark National Scenic Riverways. Recent conversations with the Ozark Trail Association indicate there is still a great deal of interest among their membership in beginning work on the route. It may be possible to do that within the next year, especially if we are able to begin the trail work on

Pioneer.

We also have begun to contract some maintenance work with the Ozark Trail Association (OTA) for mowing those segments of the Ozark Trail that go through old fields and that require heavier motorized equipment to maintain. Then, along with the volunteers we have from both the OTA and Sierra Club, we hope to have adopt-a-trail volunteers provide additional work on the Blair Creek Section of the Ozark Trail.

In December we received word from Mark Twain Forest Supervisor David Whittekiend that the Ozark Trail has been recognized as a National Recreation Trail in the National Trails System (authorized by the National Trails System Act of 1968). Since the late 1970s, Pioneer Forest has cooperated with other landowners (Missouri Department of Natural Resources, Missouri Department of Conservation, Ozark National Scenic Riverways, U.S. Army Corps of Engineers, and Mark Twain National Forest) who together administer the approximately 350 miles of Ozark Trail in Missouri.

*Two views into Grand Gulf from the observation platforms, the damaged tree tops are visible in the background.*
PHOTOS BY Greg Iffrig

***Grand Gulf State Park, Oregon County***. Within the past year there has been a new State Park Superintendent appointed for Grand Gulf, Matt Kantola. Matt has previous experience within the Missouri State Park System, coming to Grand Gulf from the Battle of Athens facility.

The Park's forest and woodland were damaged from January's ice storm. At the park and elsewhere in southern Missouri, as much as an inch of ice fell on January 26. Farther north this was mixed with up to seven inches of snow that together crippled the area. Farther east, much of Dunklin, Mississippi, Scott, and Pemiscott counties were without power for weeks. The park was closed for about a week while downed tree tops and branches were cleared. From the trails and overlooks, the ice damage to the trees remains very apparent.

Most of the State Park development has been centered on the south side of the natural bridge. A walking path

leads across the bridge and casual trails have been developed on the north side, around the gulf, and into the bottom. A plan has been proposed for a trail loop, which will incorporate existing trails with about ½-mile of new trail to better accommodate public use. Possibilities for additional access into the bottom of Grand Gulf are also being considered.

This year marks the 25th anniversary of the State Park. A celebration has been planned for September 19. The L-A-D Foundation continues to lease the park to MDNR.

***Dillard Mill State Historic Site, Crawford County***. This site, also owned by the L-A-D Foundation, was added to the Missouri State Park System in 1977. At that time, the Department of Natural Resources' Division of State Parks began its successful project to restore the grist mill to operation. Since then, visitors have enjoyed this firsthand experience which had been a trademark of the historic site.

Within the past year the operation of the mill has ceased. This has resulted from the accumulation of debris backed up behind the dam. The handiwork of the site's maintenance worker had kept the mill in operation, but wear and tear and the age of the dam gates no longer allow its safe operation. Restoring the working mill will almost certainly require construction of a coffer dam in front of the existing dam, plus additional materials and labor for the dam gates. The Division of State Parks is planning to provide its own labor from a specially trained historic site maintenance and repair crew. They would complete this work at Dillard as well as similar work at Bollinger Mill. The Labor and materials at Dillard are estimated to be nearly $40,000. The work is expected to be completed within the next year.

***Missouri Department of Conservation Overview***. According to the L-A-D Foundation lease of seven Missouri Natural Areas to the Missouri Department of Conservation, each of these areas is to be managed and reviewed according to a Management Plan. Four plan revisions have been completed (Ball Mill, and the three Texas County Natural Areas--Dripping Springs, Horseshoe Bend, and Piney River Narrows). The Hickory Canyons Natural Area Management Plan is being revised and should be available for our review soon. Two others are due before the end of the year--Rocky Hollow and Clifty Creek.

Horseshoe Bend Natural Area, Texas County. This area is one of three that have been included in the Texas County Natural Areas Management Plan. Prior to work on the plan, there was general discussion between the Foundation and the Conservation Department regarding property management issues and concerns. Among them was the need to address any acquisition needs. That discussion was key to identifying an adjacent 11-acre parcel, which was later purchased and added more than ¼-mile of riverfront (see map pg. 34).

There is agreement to investigate this expansion of the Natural Area boundary and to allow for the Conservation Department to restore additional open fields back to forest.

Piney River Narrows Natural Area, Texas County. Because a project to seed native grasses near the parking area was unsuccessful, the area will be allowed to succeed back to a more natural forested condition. An area planted to pine will be thinned and converted back to hardwood forest, as will an area once planted to walnut.

Dripping Springs Natural Area, Texas County. Up until recently, there had been an engraved wooden sign mounted to the bluff face. This has fallen, and it was decided that we not replace the sign on the bluff.

Hickory Canyons Natural Area, Ste. Genevieve County. The management plan remains under development, but the main issues here are related to rounding out the boundary wherever possible and conducting at least a re-inventory of plants of interest from the canyon. The purpose would be to add to the floristic inventory conducted by renowned botanist and naturalist, Robert Mohlenbrock in 1985.

***Sample shots from the trail. Clockwise from the upper right: John Roth with John Karel (John Roth was a friend of the Foundation who died in a farm accident on July 3, 2009; we are among many who will miss him but will be happy to be able to enjoy his trail handiwork on Foundation land for years to come.); attendees at the trail dedication; volunteers discussing trail work; and stone handiwork of John Roth and his crew who were so dedicated to completing this project.***
**PHOTOS BY Greg Iffrig**

Clifty Creek Natural Area, Maries County. Construction of a loop trail was completed early last fall using a Missouri Department of Natural Resources' Recreation Trails Program grant issued to the Missouri Department of Conservation, along with funds contributed by its Conservation Heritage Foundation. On Saturday, October 18 the trail was dedicated. In attendance were President John Karel, Board member Jerry Vineyard, and staff member Greg Iffrig. There were about 30 people in attendance. Since the trail's development, there have been many who have remarked on the quality of construction and the thoughtfulness of its design.

Ball Mill Resurgence. Restoration work continues. This spring a controlled burn was conducted on three areas of the newly-acquired Shafer Tract. Each of these three areas had been seeded the year before with native warm season grasses. Burning is being used to encourage these new seedlings.

The spring burn extended through the forest area of the bluff, but it was not one of our management goals. All burns will be used to encourage grass and grass seeding areas. Purposeful burning will not be used within the forest.

L-A-D Foundation

FOREST MANAGEMENT
LAND CONSOLIDATION
RESEARCH
EDUCATION AND OUTREACH
RECREATION AND NATURAL AREAS
**GRANTMAKING AND COMMUNITY OUTREACH**
PUBLIC POLICY ISSUES
ADMINISTRATIVE ISSUES

# Grantmaking and Community Outreach

*Scholarship recipient Courtney Bland with Tim Dyer*
PHOTO BY Pioneer Staff

## FOUNDATION GRANT AWARDS

In the spring of 2009, the Grants Committee decided that it would not call for grant applications due to the economy and yearly budget review, but would honor commitments that had already been made. In October 2008, the Grants Committee, under the leadership of Chairman Jerry Vineyard, recommended, and the Foundation Board approved, the funding of grants to three organizations: Great Rivers Environmental Law Center, Real Community Radio, and Show-Me Missouri Backcountry Horsemen. Below are some of the highlights from these three organizations:

· ***Great Rivers Environmental Law Center***—Currently investigating illegal and resource-damaging actions on the Ozark National Scenic Riverways.

· ***Real Community Radio Network Inc***.—Grant is being used to support a local radio station (KZ88.1FM) in the Ozarks area that informs, educates, and entertains approximately 25,000 listeners on topics that include the region's environment. The station is modeled after National Public Radio and provides discussion forums for listeners.


· ***Show-Me Missouri Backcountry Horsemen***—Published a coloring book (pictured at right) that educates young trail riders on the importance of minimizing equestrian impacts on public and private land.

A fourth grant was offered to the Missouri Coalition for the Environment for work to research the planning efforts of the National Park Service regarding the Ozark National Scenic Riverways; to educate Missourians about the important resources of the park; and to encourage public involvement in future plans for the park. The Coalition was to provide matching funds and hire qualified staff. It was not until July of this year that the Foundation grant was finalized. The grant will continue in several installments through the end of this year.

*"Show-Me Missouri Back Country Horsemen (SMMBCH) is very pleased to enclose a copy of the "Fun With Horses Activity and Coloring Book" made possible from the grant that was awarded to us in 2008 by the L-A-D Foundation. This educational "fun" book will be distributed free of charge to youth.*

*SMMBCH wishes to thank you again for awarding us the grant to make this possible. The drawings were done by SMMBCH members and the Education Committee put together and designed the rest of the booklet. We are very pleased with the outcome and look of the project and hope you are pleased as well."*

***Marsha Copeland***
***SMMBCH Education Chair***

## COMMUNITY SUPPORT

During the past year, Pioneer Forest has contributed to various community groups and projects.

***Scholarships.*** In the spring of 2009, scholarships were given to two local high school students--one from Bunker High School and one from Eminence High School. These scholarships were in the amount of $1500 each. Courtney Bland from Eminence received a second-year scholarship as a sophomore in the amount of $500.


*Restored front exterior of the Summersville Mill.*
PHOTO BY Jason Green

***Summersville Mill***. Ongoing efforts have been made to restore the Summersville Mill, a flour mill built in 1868. L-A-D has contributed funds toward the restoration, and Ron Harper and Jon Smith have contributed materials. Members of the L-A-D Board visited the mill in May 2009.

***Ozark Natural and Cultural Resources Center***. Pioneer Forest provided financial support this summer for the Ozark Natural and Cultural Resources Center in Salem. This has become an excellent venue for public information about the region, including Pioneer Forest. In 2007, the Foundation issued the center a grant to support the installation and display of several exhibits.

L-A-D Foundation

FOREST MANAGEMENT
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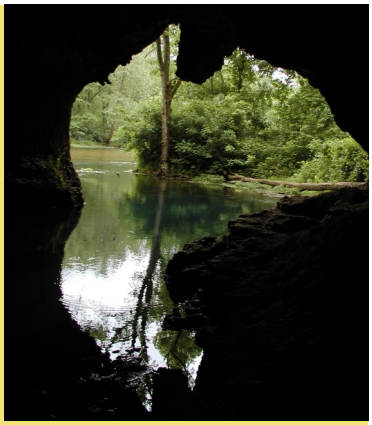
GRANTMAKING
**PUBLIC POLICY ISSUES**
ADMINISTRATIVE ISSUES

# Public Policy Issues



*Cave Spring, Current River*
PHOTO BY Greg Iffrig

## NATIONAL PARK SERVICE, OZARK NATIONAL SCENIC RIVERWAYS

This national park was formed at the urging of area residents, local and state officials, and many across Missouri seeking to save the Current River from a proposed dam and to preserve its natural beauty. Congress established the Ozark National Scenic Riverways in 1964 as the first national river park. It is managed as a unit of the National Park System.

L-A-D Foundation is the largest property owner in the Current River watershed, with significant property directly associated with the Ozark National Scenic Riverways. These lands include L-A-D fee title property along one or both sides of the rivers (approximately 30 miles), conservation easements on these riverfront lands (held by the Park Service), and substantial Pioneer Forest lands within the park purchase unit as well as adjacent to the park. Taken together, these lands offer scenic integrity and substantial resource value.

The Dreys, and now the Foundation, view as one of our responsibilities a commitment to continue to provide a strong and positive conservation influence within the Current River watershed. This goal is compatible with the legal responsibility that the National Park Service has for administering the Ozark National Scenic Riverways.

The opening language of the law states that the purpose for this park is for *conserving and interpreting unique scenic and other natural values and objects of historic interest, including preservation of portions of the Current River and the Jacks Fork River in Missouri as free-flowing streams, preservation of springs and caves, management of wildlife, and provision for use and enjoyment of the outdoor recreation resources thereof by the people of the United States…*(from Public Law 88-492, 88th Congress, August 27, 1964).

This area has been a beautiful and healthy place for those interested in the outdoors. Private businesses, using the national park resource as an attraction, have prospered and will continue to do so as long as these nationally important resources are protected and cared for. Diminishing these resources would have a profound effect on the region.

We have worked with the Ozark National Scenic Riverways staff on various matters over many years regarding caves, scenic easements, and trail development. We have seen firsthand where problems go unaddressed and their impacts within the park worsen. Examples include the failure to mark boundary lines (fundamental to establishing property location for neighbors and others); to recognize and repair damage from horses (the excessive number of horse trails and rutting that extend onto adjacent private property) to halt the damaging influences of large motors on boats intended for flat-water recreation (causing bank erosion and loss of habitat--including, for example, the Ozark hellbender); and to enforce trespass violations (for example, where L-A-D has nearby lands at Lewis Hollow, Flying W, and Devils Well, in the upper Current, and the Broadfoot fields near the junction of the Current and Jacks For rivers).

***General Management Planning***. We are participating in the current National Park Service efforts to develop a new General Management Plan for the Ozark National Scenic Riverways. Earlier this summer, the Service issued an overview of management alternatives for the park, entitled *Preliminary Alternatives, Ozark National Scenic Riverways, General Management Plan/Wilderness Study, Newsletter #3, Summer 2009*. Then later in the summer, over the course of a week, NPS managers and staff conducted open house evenings seeking ideas about park management. Two of these were attended by Board Members and staff. Following these meetings, L-A-D Foundation Chairman Leo Drey responded to the agency request for comment on proposed management alternatives. In his letter Chairman Drey pointed out the many shortcomings of the park administration and the failure to enforce Park Service policy. He asked that NPS officials be mindful of the law, correct the problems, and restore this park's wonderful sample of original Ozark landscape.

## MARK TWAIN NATIONAL FOREST

After remaining vacant for some time, the position of Mark Twain Forest Supervisor was filled. The new Supervisor is David Whittekiend. On July 1, Director Leon Cambre, President John Karel, and Liaison Greg Iffrig met with Mr. Whittekiend as an introduction to the Foundation and Pioneer Forest. We also discussed the need to repair Greer Mill and Missouri wilderness issues.

*"The result of these accumulated damages is that our first national river park now resembles a continuum of motorboat intersections removed from everything natural. Visitors are exposed to an assault of human and mechanical noise; the sounds and silences of nature are hidden. The refreshing experience of nature's beauty is hidden, too.*

*Private and well-kept places along the river that were purchased for the park have become overrun with roads, horse trails, and all types of motorized vehicles. The vision for the Ozark National Scenic Riverways is at risk of being lost; the laws that govern most national parks are being broken at the Riverways.*

*…. The legislation that was passed in 1964 -- Public Law 88-492 -- was designed to protect the outstanding qualities of this river resource as our nation's first national river park. I believe the national park management of the Ozark National Scenic Riverways can and must be realigned with the law and the Congressional intent that established this park."*

***Leo Drey, Chairman***
***L-A-D Foundation***
***Letter to Reed Detring,***
***ONSR Superintendent***
***July 31, 2009***

Pioneer Forest shares boundaries with the Mark Twain National Forest. As forest managers, we share an interest in the forest industry and markets. We make it a point to periodically meet with National Forest staff on matters of mutual interest.

## CURRENT RIVER CONSERVATION OPPORTUNITY AREA MEETINGS

The Current River Conservation Opportunity Area (COA) is a multi-agency group of natural resource managers working together on resource management issues in the Current River watershed. The group also shares information and expertise. Last year, we were granted funds from the COA for cost-share assistance to purchase equipment for Pioneer Forest. Pioneer staff is continuing to take an active role in the Current River COA meetings.

# Administrative Issues

*Board members Rindy O'Brien and Susan Flader*
PHOTO BY Lauri Drey

## Pioneer Forest Lumber LLC

Pioneer Forest Lumber LLC began operation in early 2009. Our goal is to sell 100% Pioneer product. We also plan to have Forest Stewardship Council (FSC) certification for this new venture this fall.

Our lumber company (Pioneer Forest Lumber LLC) buys logs from Pioneer Forest LLC in the same way that we have been selling logs to other sawmills such as Ron Harper or Mercantile Lumber. Pioneer Forest Lumber LLC retains custody of the product as it adds value during the processing. For example, the lumber LLC pays the cutting and hauling fee, as well as the sawmill fee, and then sells rough cut products such as railroad ties, grade lumber, and blocking. We also sell select white oak logs for producing barrel staves. We do all of this through a small sawmill in Salem, Spencer Lumber Company.

*Pioneer Forest Lumber LLC*
PHOTO BY Jason Green

Both Pioneer Forest Lumber LLC and Spencer Lumber Company hope to develop finished wood products in the future. This would require additional processing for such things as molding, flooring, wood paneling, and cabinet wood. Spencer Lumber has already acquired a milling and planing machine for this purpose. Spencer Lumber can also dry the wood using another local processor in Licking, Missouri. One of Pioneer's warehouse buildings may be used to store grade lumber as markets begin to develop.

*Brandon Kuhn*
PHOTO BY Jason Green

## Pioneer Forest's New Employee

Pioneer Forest added a new Forester, Brandon Kuhn, to our staff in August 2009. Brandon has a Bachelor of Science degree in Fisheries, Wildlife, and Forestry from the University of Missouri-Columbia. Prior to joining Pioneer, he was employed with the Current River Timber Company in Licking, Missouri.

## L-A-D And Pioneer Forest Financial Accounts

Throughout the past year, several changes and additions were made to both the L-A-D and Pioneer financial accounts. A new money market account was established with Northern Trust in L-A-D's name and was opened with a grant received from the Leo A. Drey Pioneer Foundation. Pioneer Forest LLC established a money market account with Northern Trust, and the new Pioneer Forest Lumber LLC opened a US Bank checking account.

Funds were distributed among these accounts to stay within the $250,000 FDIC limit of deposit insurance.

## Grand Gulf State Park

The original lease for Grand Gulf State Park between the L-A-D Foundation and the Missouri Department of Natural Resources ( MDNR) was for 25 years. That agreement began July 1, 1984 and extended to June 30, 2009. To continue the provisions of that agreement, Hugh Law of the Lowenhaupt & Chasnoff law firm, prepared a six-month bridge lease which is waiting to be signed by the Foundation and the Department. The Foundation and MDNR had agreed to revise the language of that original document to conform to the provisions of the lease of Dillard Mill to the MDNR as amended in March 2001.

# Appendices


Roger Pryor Pioneer Backcountry
LEGEND
Roger Pryor Pioneer Backcountry
Missouri Department of Conservation
Current River State Park
In 2008 an approximately 600-acre portion of the Missouri Department of Conservation lands shown here were transferred to the State Park System to become Current River State Park.
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## L-A-D Foundation Lands Recognized by Various State or National Programs

| Name | County | Recognition, Date, Size |
|---|---|---|
| Ball Mill Resurgence | Perry | Missouri Natural Area[1], 1979, 19 acres |
| Clifty Creek | Maries | Missouri Natural Area, 1971, 230 acres |
| Current River | Shannon | SAF Natural Area[2], 1955, 10 acres<br>Missouri Natural Area, 1977, 10 acres;<br>Addition, Missouri Natural Area, 2005, 255 acres;<br>total 265 acres. |
| Dillard Mill | Crawford | Missouri Historic Site[3], 1977, 130 acres |
| Dripping Springs | Texas | Missouri Natural Area, 1973, 8 acres |
| Grand Gulf | Oregon | National Natural Landmark[4], 1971;<br>Missouri State Park[3], 1984, 159 acres<br>Missouri Natural Area, 1986, 60-acre portion |
| Hickory Canyons | Ste. Genevieve | Missouri Natural Area, 1973, 420 acres;<br>Addition, Missouri Natural Area, 1979, 530 acres;<br>total 950 acres |
| Horseshoe Bend | Texas | Missouri Natural Area, 1973, 69 acres |
| Lily Pond | Reynolds | Missouri Natural Area, 1975, 8 acres |
| Piney River Narrows | Texas | Missouri Natural Area, 1971, 50 acres |
| Pioneer | Shannon | SAF Natural Area, 1964, 20 acres<br>Missouri Natural Area, 1977, 20 acres |
| Rocky Hollow | Monroe | Missouri Natural Area, 1973, 191 acres<br>National Register of Historic Places, 1974, 191 acres |
| Roger Pryor Pioneer Backcountry | Shannon | Lease to Missouri State Parks, 2005, 56,675 acres |
| Scenic Easements | Shannon, Carter | National Park Service, Ozark National Scenic Riverways, 1970, 951 acres |
| Triple Sink[5] | Shannon | Missouri Natural Area, 1980, 23 acres; Addition of 19 acres included as part of Sunklands Natural Area in 1999, (total of 42 acres) |

### Pioneer Forest LLC Forest Reserves[6]

| | | |
|---|---|---|
| Bluff School, Medlock Cave | Shannon | Established, 1995, 51 acres |
| Fishtrap Hollow and Marshy Spring Hollow Fens | Shannon | Established, 1995, 45 acres |
| Laxton Hollow | Shannon | Established, 1995, 145 acres |
| Leatherwood Creek | Shannon | Established, 1995, 1003 acres |
| Old Schoolhouse Hollow Fens | Shannon | Established, 1995, 140 acres |
| Sinkhole Ponds Complex | Reynolds | Established, 1995, 45 acres |
| Sutton School Hollow Fens | Shannon | Established, 1995, 75 acres |

[1]The Missouri Natural Areas System began in 1971 with the first areas owned by the Missouri Department of Conservation. Beginning in 1977, the Missouri Natural Areas Committee was established by agreement of the Missouri Department of Conservation and Missouri Department of Natural Resources to review and approve natural areas throughout the state under a variety of public and private ownerships.
[2]The Society of American Foresters Committee on Natural Areas was organized in 1947.
[3]State Historic Sites and State Parks are managed by the Division of State Parks, Missouri Department of Natural Resources.
[4]The National Natural Landmarks program is administered by the National Park Service. Grand Gulf is among fewer than 600 sites that have been designated in the United States.
[5]Originally designated as a Missouri Natural Area in 1980 under the ownership of the Frank B. Powell Lumber Company; acquired by the L-A-D Foundation in 2006.
[6]The concept for Forest Reserves was discussed by Pioneer Forest staff in 1994; in 1995, the management plan for each of these areas was defined along with boundaries, and following Leo Drey's agreement and the endorsement of the Foundation Board, the program was adopted.

# GLOSSARY OF TERMS

**Acre** – A unit of land area measurement equal to 43,560 square feet.

**Advanced regeneration** – Seedlings or saplings that develop or are present in the understory.

**Age class** – An aggregation of trees that are essentially the same age. Age-class is often used synonymously with "size-class." Age intervals of 10 years are commonly considered to be the same age class.

**Aquatic habitat** – A local environment that is in or near water that provides food, a place to reproduce, and shelter for water-dependent species.

**Aquatic invertebrate taxa** – Includes a range of organisms such as snails, crustaceans, insect larvae, leeches, and aquatic worms.

**Aspect** – The cardinal direction that a slope faces (north, south, east, west)

**Avifauna** – Avian wildlife, birds.

**Basal area** – The area (in square feet) of the cross section of a tree stem, including the bark, generally at breast height (4.5 feet above the ground). In the aggregate, it is the total cross-sectional area per acre of all trees at breast height.

**Biological diversity** – The conditions of having a variety of biotic characteristics and traits (e.g., genes, species, and community types), life history stages, structural forms (e.g., stratification, zonation, and the physical structures of plants), biotic patterns (e.g., reproductive activity, food web, social, and interactive), and functions (e.g., nutrient cycling, hydrological cycling, and provision of habitat). Also termed "biodiversity."

**Biotic index** – A range of values used to observe and compare biotic changes in response to pollution or habitat change.

**Board foot** – A unit for measuring wood volume. It is commonly used to express the amount of wood in a tree, sawlog, or piece of lumber. A piece of wood one foot wide by one foot long by one inch thick equals one board foot.

**Bolt** – A short log or a squared timber cut from a log, usually less than 8 feet in length.

**Buffer strip** – A strip of vegetation that is left unmanaged or is managed to reduce the impact a treatment or action on one area would have on an adjacent area.

**Canopy** – The more or less continuous cover of branches and foliage formed collectively by the tops, or crowns, of adjacent trees.

**Canopy closure** – The progressive reduction of space between tree crowns as they spread laterally.

**CFI** – Continuous Forest Inventory, an inventory repeated on a regular frequency over a long time period to locate and estimate quantities by species, products, size, quality, and other characteristics.

**Chrono-sequence** – Forest stands covering a range of ages and management-related disturbances.

**Clear-cut** – A harvest method used in the even-aged silvicultural system. The removal of all merchantable and non -merchantable trees greater than 1.0 inch in diameter in one harvest cut. Pioneer Forest management does not include the use of clear-cutting.

**Community** – An assemblage of plants, animals, bacteria, and fungi that live in an environment and interact with one another, forming a distinctive living system with its own composition, structure, environmental relations, development and function.

**Conservative Species –** Plants that are most often associated with a specific habitat or natural community. For example, a weedy plant species can be found along roadsides, disturbed woodlands, and old fields, whereas lead plant is only found in prairies and open glades. This may be better understood by comparing birds such as the common American Robin to the uncommon and more conservative Swainsons Warbler.

**Cord** – A unit of gross volume measurement for stacked roundwood based on external dimensions, generally a 4-

by 4- by 8-foot stack (128 cubic feet of stacked wood.)

**Cross-tie** – A transverse timber forming a foundation or support

**Cull** – A tree or log of merchantable size that because of defect has no merchantable value. A cull may be highly valuable as a den tree.

**Customary rights** – Rights that result from long habitual or customary actions that have, by such repetition and by uninterrupted acquiescence, acquired the force of law within a geographical or sociological unit.

**Cutting cycle** – The planned interval between partial harvests in an uneven-aged stand.

**Dendrochronology** – The study of tree rings and tree ring patterns influenced by environmental factors such as climate and fire. Analyzing annual growth increments helps us to understand the age of a tree or a forest canopy, and to compare responses to change between species and within a forest or a region.

**Den tree** – A living tree with a cavity large enough to shelter wildlife. Also called a cavity tree.

**Diameter breast height (d.b.h.)** – Diameter of a tree measured on the uphill side of the tree at 4.5 feet (breast height) above ground line.

**Disturbance regimes** – Any of a variety of events, such as wind, floods, fires, that cause a significant change in the local or regional environment and the associated plants or animals.

**Down woody debris** – Woody portions of trees that have fallen to and are lying on the ground. Down woody debris includes twigs, branches, logs, stumps, and whole trees that have fallen. Also referred to as either fine or course woody debris.

**Ecosystem** – A conceptual unit comprised of organisms interacting with each other and their environment, having the major attributes of structure, function, complexity, interaction and interdependency, temporal change, with no inherent definition of spatial dimension.

**Endangered species** – Any species that is in danger of extinction throughout all or a significant part of its range. Endangered species may be either state or federally listed.

**Erosion** – The displacement of soil from one place to another by any means, including wind, water, gravity, logging, and road building.

**Even-aged management** – A system of forest management in which stands are maintained or cut with relatively minor differences in age, usually less than 10% of the rotation.

**Even-aged silvicultural system** – The application of a combination of actions that results in the creation of stands of trees of essentially the same age that are growing together. Managed even-aged forests are characterized by a distribution of blocks of single-age stands (and therefore, tree size) throughout the forest area. The difference in age between trees forming the main canopy level of a stand usually does not exceed 20% of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size and is harvested. Clear-cut, shelterwood, or seed tree cutting methods produce even-aged stands.

**Exotic species** – Species that would not occur naturally in the location where they are found.

**Federally listed** – Animals or plants that have been formally added to the federal lists of endangered or threatened wildlife or plants by the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service. In legal terms, also includes species formally proposed for addition to these lists.

**Fluctuating asymmetry (FA)** – A measure of developmental stability based on genetic complexity.

**Forest** – Generally defined as an area with over 60% canopy cover.

**Forest structure** – The layers of vegetation within a forest. These layers are, in general, seedlings, advanced reproduction, saplings, poles, and overstory. Except for seedlings, each of these layers can be made up of multiple age classes.

**Fragipan** – Loamy, brittle subsurface soil layer that is low in porosity and organic matter, and is low or moderate in clay, but high in silt and fine sand. A fragipan appears to be cemented and restricts roots.

**Geo-reference** – Spatial information related to geographic data allowing the data to be displayed along with other related geographic data within a geographic context.

**GIS/GPS –** Geographic Information System, best described as telling us where a particular oak is within the forest, compared to GPS (Geographic Positioning System), which tells us the particular point (x, y, z) where we are within the forest.

**Harvest cycle** – The time period between harvest entries when using an uneven-aged management system.

**Harvest rotation –** The time period between harvests when using an even-aged management system.

**HCVF – High Conservation Value Forests** – Those forests that possess one or more of the following attributes:

1. forest areas containing globally, regionally, or nationally significant concentrations of biodiversity (e.g., endangered species) and/or large landscape-level forests contained within the management unit, where viable populations of most, if not all, naturally occurring species exist in natural patterns of distribution and abundance;
2. forest areas that are in or contain rare, threatened, or endangered species;
3. forest areas that provide basic services of nature in critical situations (e.g., protection of water catchments and control of soil erosion)

**High-grading** – Harvesting to extract only the most valuable trees from a forest. No consideration is given to regeneration requirements of tree species or future development of the trees or forest.

**High-quality hardwoods** – Hardwood trees or stands that will yield high-value timber products, such as face veneer, knot-free lumber, furniture, or specialty product stock and flooring.

**Ingrowth** – Trees that during a specified period have grown past an arbitrary lower limit, primarily of diameter or height. Ingrowth is usually expressed as basal area or volume per unit area.

**Indicator species** – A species whose presence in a certain location or situation at a given population level indicates a particular environmental condition. Population changes are believed to indicate effects of management activities on a number of other species or on water quality.

**Karst (topography)** – Terrain with distinctive characteristics of relief and drainage arising primarily from a higher degree of rock solubility than is found elsewhere. Some of these characteristics are springs, losing streams, underground drainage and water reservoirs, caves, natural bridges, and sinkholes.

**Landscape** – A physiographic unit that is capable of sustaining several populations of a species; a mosaic of landforms and plant communities irrespective of ownership or other artificial boundaries.

**Layering** – A forest regeneration technique in which portions of a plant, such as a limb, can be caused to sprout roots and stems.

**LEED** – Leadership in Energy and Environmental Design; includes the Green Building Rating System.

**Legacy tree (or forest)** – Preserves certain qualities (such as old-growth trees or forests, wildlife habitat, species, community, etc.) that may be lacking on a landscape scale.

**Log landing** – A place where logs are taken (skidded) to be loaded on trucks for transport to the mill.

**Losing stream** – A flowing stream that gradually gets smaller or disappears due to the loss of some or all of the flowage into below-ground channels or caverns.

**Mature tree** – A tree in which growth has reached the culmination of mean annual increment (economic maturity) and/or one in which growth equals loss of biomass, beyond which decline and mortality will eventually occur (biological maturity).

**MBF** – Thousand board feet

**MMBF** – Million board feet.

**Native species** – Any species of flora or fauna that naturally occurs in a particular area, and that was not introduced by humans.

**Natural forest** – A forested area in which many of the principal characteristics of the native ecosystems are present.

**Natural regeneration** – An age class created by natural seeding, sprouting, suckering, or layering.

**Neotropical migrants** – Bird species that breed in the United States during summer and spend winter in Mexico, Central America, South America, and the Caribbean Basin.

**Non-timber forest products** – All forest products except timber; other materials obtained from trees, such as resin, bark, and leaves, as well as other non-tree plant or animal products found in a forest.

**Old-growth forest** – Ecosystems distinguished by old trees and related structural attributes. Old-growth encompasses the

latter stages of stand development. These latter stages typically differ from earlier successional stages in a variety of ways that may include tree size; accumulations of large, dead woody materials, especially on the forest floor; number of canopy layers; species composition; and ecosystem functions.

**Old-growth stand** – A stand of mature trees that is unroaded or lightly roaded, with little evidence of previous logging, usually ranging in size from 15 to 500 or more acres, and of sufficient size and configuration to maintain specific ecological functions.

**Overstory** – The uppermost layer of foliage that forms a forest canopy.

**Plantation** – A forested area that lacks most of the principal characteristics of native ecosystems because of human activities, such as planting, sowing, and intensive crop-like management and harvests.

**Progeny** – offspring from a parent, in this case, the offspring of tree species within the timber stand.

**Regeneration** – Seedlings and saplings existing in a stand. This is the process by which a forest is renewed, either artificially by direct seeding or planting, or naturally by self-sown seeds and sprouts.

**Resurgence** – A sinkhole that acts in the traditional manner of collecting and moving surface water directly to underground reservoirs and then, during especially heavy rainfall, reverses this flow of water to act like a spring.

**Riparian area or zone –** An area along the bank of a river, stream, lake, or pond identified by the presence of vegetation that requires free or unbound water or is more moist than normally found in the area. The zone may be a narrow strip of vegetation that borders a creek, river, or other body of water. Riparian zones may occupy only a small percentage of a watershed but are extremely important components of the general landscape.

**Root-sprung** – A condition of storm-damaged trees in which high winds bend a tree to the point where roots are partially pulled from the ground but the tree is not blown down.

**Savanna landscape** – A landscape characterized by widely spaced trees with an understory of native grasses and shrubs. Savannas are suitable for wildlife species not generally found in closed-canopy landscapes.

**Scale** – A measure of volume in a tree based on the diameter and height of the tree.

**Silviculture** – The art and science of producing and tending a forest by manipulating its establishment, composition, and growth to best fulfill the objectives of the owner, which may or may not include the production of timber.

**Single-tree selection** – A harvest method expressed by the selection of individual trees to be removed from a stand of trees.

**Skid trail** – A road or trail over which equipment or horses drag logs from the stump to a road or log landing.

**Snag** – A standing dead tree from which leaves and most of the branches have fallen. A snag may be newly dead and appear to be a leafless tree or may be little more than a tall stump from which all of the limbs and bark have fallen. Snags are used by a variety of wildlife species.

**Streams** – A channel with a defined bed and a bank that carries enough water flow at some time during the year to flush out leaves. (1) Ephemeral streams are streams that flow less than 10% of the time, only in direct response to rainfall, with a channel that may be scoured or unscoured and is always above the water table. (2) Intermittent streams are streams that flow seasonally (10% - 90% of the time) in response to a fluctuating water table, with a scoured channel that is at least three feet wide. (3) Perennial streams are streams that flow year-round (more than 90% of the time) with a scoured channel that is always below the water line.

**Stumpage** – The value of standing timber or uncut merchantable timber.

**Suckering** – Sprouts that grow along the trunk of a tree, usually after a drastic change in growing conditions, such as a heavy harvest, allowing a sudden increase of light to reach the trunk.

**Sustainable forest management** – The practice of meeting forest resource needs and values of the present without compromising the forest's value for future generations.

**Threatened species** – Any species that is likely to become endangered within the foreseeable future and that has been designated in the Federal Register or is State Listed.

**Timber stand improvement (TSI)** – A thinning made in timber stands to improve the quality, composition, structure, condition, health, and growth of the remaining trees.

**Topographic relief** – The three-dimensional quality of the surface of land, more specifically, depicting the differences between the lowest and highest elevations within an area or region (the most-used example would be a topographic map

showing contour intervals).

**Topographic roughness** – An index value obtained from the measure of a larger region divided by the measure of many small measuring surfaces.

**Travertine –** A mineral consisting of a massive layered calcium carbonate formed by deposition from spring waters or especially from hot springs.

**Tufa** – A natural, calcareous deposit associated with springs, lakes, and groundwater.

**Understory –** The area of the forest at the lowest height level below the forest canopy. Plants in the understory are a mix of saplings of canopy trees together with understory shrubs and trees. In the Ozarks, dogwoods, redbud, and bladdernut are rarely tall and generally understory trees.

**Uneven-aged silvicultural system** – The application of a combination of actions that result in the creation of stands in which trees are in at least three age classes. Managed uneven-aged forests are characterized by a distribution of age classes and tree sizes ranging from regeneration to mature trees on each acre throughout the forested area. Regeneration in a particular stand is obtained throughout the harvest cycle and following a harvest and, in oak/hickory stands, is retained until a short time after complete canopy closure. Single-tree selection or small-group selection tree harvest methods produce uneven-aged stands.

Vascular Plant – A plant having specialized tissue for circulating resources (water, minerals, and photosynthetic products) through the plant. These include ferns, club mosses, flowering plants, and conifers.

**Vegetative architecture** – Stratified vegetation levels consisting of various canopy layers, understory layers, and groundcover.

**Veneer** – A thin slice of wood removed from a log. The thin slice is laminated on to a lower quality or more stable base often, but not necessarily, of the same species.

**Veneer tree** – A large (usually more than 18 inches in diameter), knot-free, high-quality tree from which veneer logs are obtained.

**Volume** – The amount of wood in a tree, stand of trees, or log expressed in some unit of measure, such as board feet, cubic feet, etc.

**Watershed** – An area of land with a single drainage network. A watershed may be very large, such as the Mississippi River watershed, or smaller, such as the Blair Creek watershed. A watershed may or may not include a perennial stream. Holmes Hollow is an example of a watershed without a perennial stream.

**Wetlands** – Those areas that are inundated by surface or ground water often enough to support plants and other aquatic life that require saturated or seasonally saturated soils for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, potholes, wet meadows, fens, river overflows, mud flats, and natural ponds.

**Woody debris** – All woody material, from whatever source, that is dead and lying on the forest floor.

**Woodland** – Generally defined as an area with less than 60% canopy cover.

**Working forest** – That portion of a forest dedicated to the production of forest products.

SEPTEMBER 2009. Between 1996 and 2006 the staff of Pioneer Forest prepared an *Annual Report to the Foundation* for the Board of Directors of the L-A-D Foundation. Beginning in 2007, this report was expanded to become the *Annual Report of the L-A-D Foundation*.

Other publications and information about the Foundation or Pioneer Forest are available from the L-A-D Foundation, 705 Olive Street, Suite 724, St. Louis, Missouri 63101 or from Pioneer Forest, P.O. Box 497, Salem, Missouri 65560. Information is also available at www.ladfoundation.org or at www.pioneerforest.org.

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