



L-A-D FOUNDATION

Since 1962



Annual Report
October 2016



COVER PHOTO: A caver with the Cave Research Foundation explores Big Bear Cave on Pioneer Forest in January 2016. Pioneer Forest and the L-A-D Foundation work closely with caving organizations as they map and research caves on our lands. As of this year, the Cave Research Foundation has documented 175 caves on L-A-D Foundation land, some of which are protected refuges for bat populations. The Foundation also works to promote healthy underground water systems through cleanup efforts in the karst plain of Perry County. Caves on L-A-D lands are generally closed to the public, but accessible to researchers by special permission.

PHOTO: DAN LAMPING, 2016

ANNUAL REPORT

of the L-A-D Foundation

October 2016

TABLE OF CONTENTS

<i>From the President</i>	<i>3</i>
<i>Pioneer Forest Management</i>	<i>4</i>
<i>Land Consolidation</i>	<i>9</i>
<i>Research</i>	<i>11</i>
<i>Outreach and Education</i>	<i>12</i>
<i>Stewardship and Recreation</i>	<i>17</i>
<i>Grantmaking and Community Support</i>	<i>22</i>
<i>Public Policy Issues</i>	<i>24</i>
<i>Administrative Issues</i>	<i>26</i>
<i>Appendices:</i>	<i>31</i>
<i>Map of L-A-D Foundation Lands</i>	<i>32</i>
<i>List of L-A-D Foundation Lands</i>	<i>33</i>
<i>List of L-A-D Foundation Trails</i>	<i>36</i>
<i>Map of the Trails of the Roger Pryor Pioneer Backcountry</i>	<i>37</i>
<i>Glossary of Terms</i>	<i>38</i>

CONTENT: Articles were composed by the L-A-D and Pioneer Forest staff. Additional review was provided by L-A-D Foundation Board Members and Denise Henderson Vaughn.

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The L-A-D Foundation

Founder: Leo A. Drey

The L-A-D Foundation is a Missouri private operating foundation dedicated to exemplary stewardship of Pioneer Forest and other natural and cultural areas and to scientific research, education, public recreation, and encouragement for projects and policies that have a positive influence on the Missouri Ozark region and beyond.

- L-A-D Foundation Mission Statement

Leo Drey began acquisition of forest land in the Missouri Ozarks in 1951. The name Pioneer Forest was inspired by Pioneer Cooperage Company of St. Louis, the company that originally owned much of the land that was purchased in 1946 by National Distillers Products Corporation of New York, and was renamed the Seton Porter Forest. Then in 1954, Leo Drey purchased the National Distillers land and 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 and his wife Kay donated Pioneer Forest, as a limited liability corporation, to the L-A-D Foundation to be managed as an exemplary model of conservative single-tree selection forestry.

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From the President

This year we thank and congratulate Jerry Vineyard for 20 years of service as a member of the L-A-D Foundation Board of Directors. He recently announced his retirement, and our board, advisory council, and staff all extend deep appreciation for his many contributions and distinguished work. Roger Hershey, a long-time friend of many and veteran conservation leader, has been elected to the Board of Directors. We welcome him and look forward to working together.

Important work continues on our lands. Leo Drey established Pioneer Forest to demonstrate successful and conservative management of Ozark forests. Of course there are many factors that affect our work, including weather, insects, disease, and time. For some tracts, the entry period for timber harvest has extended beyond our long-established norm of 15-20-years. Bringing our harvest cycles up to date will improve light conditions within the forest, help to sustain regeneration, and continue to maintain the uneven-aged structure, for which Pioneer is so well known and highly regarded.

A little more than a year ago, the L-A-D Foundation Board designated special management for a 500-acre area on Pioneer Forest, to restore and maintain a historic shortleaf pine-oak woodland, south of Round Spring. This is where some of the last of Missouri's old growth pine was cut, and is also the last place in the state where the red-cockaded woodpecker was recorded in the 1940's. Over the past 50 years, pine management efforts here have provided an ecological foundation for restoration efforts currently underway. Our commitment to Leo Drey's conservation vision includes restoring and maintaining this native pine forest, a part of the Randolph Tract purchased from National Distillers in 1954, and the adjacent Virgin Pine tract, purchased by the L-A-D Foundation in 1996. It is distinctly different from Pioneer's general forest management and an important part of Missouri's natural history. In this special limited area we are modifying our usual management with more intensive efforts so that the canopy pine and oak woodland species and rich groundcover of native flora will flourish once again as in the original Ozarks. We highlight significant progress in this year's report.

Each year, the L-A-D Foundation donates a lease of seven Missouri Natural Areas to the Missouri Department of Conservation (MDC). We also donate a lease of one state park, one state historic site, and a trails system through the Roger Pryor Pioneer Backcountry to the Missouri Department of Natural Resources (MoDNR). These leases help make special lands available to the public. This year we added acreage to our lease with the Missouri Department of Conservation, and enhanced our lease of trails to the MoDNR by adding more pedestrian/hiking routes through the Backcountry. On these trails, visitors can experience a large and primitive landscape in the near vicinity of the Current River, a nationally important stream resource.

Finally, this year's spring barbeque at Salem was our tenth. More than 160 joined the L-A-D Board and staff for good food and fellowship. This gathering has become a signature event on the L-A-D Foundation calendar, and we especially thank the staff for their skill and work in making it such a success.

Sincerely,



John A. Karel
President, L-A-D Foundation

L-A-D Foundation

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Pioneer Forest Management



Sawyer on Pioneer Forest, 2005.
GREG IFRIG

TIMBER SALES

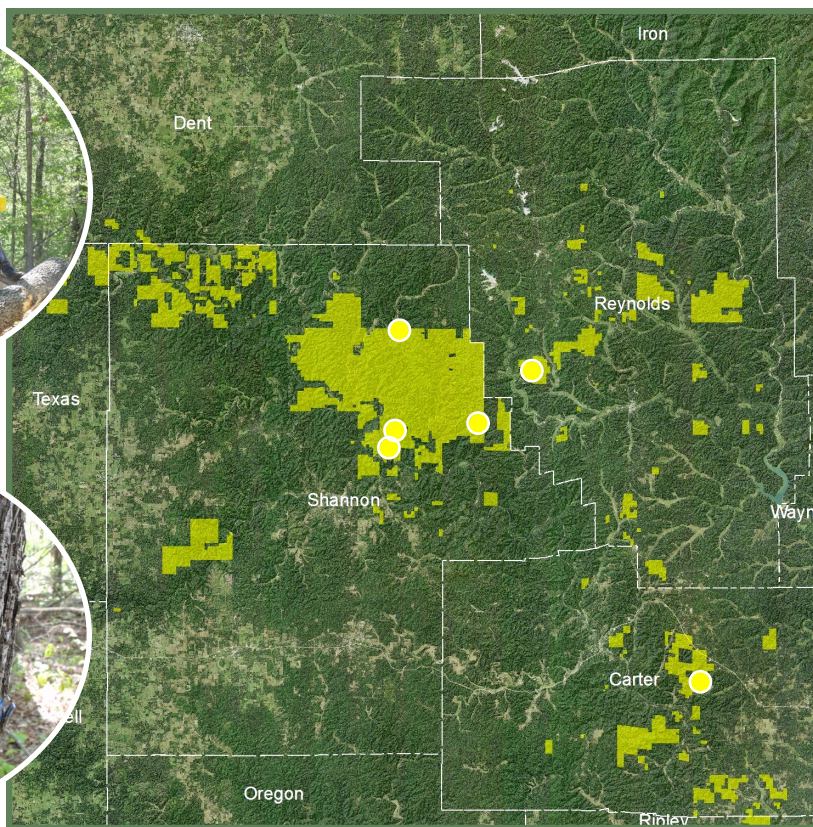
The timber harvest is expected to be 7 million board feet for the 2016 calendar year, up from 4.6 million board feet in 2015. This increase has been the result of good weather, the addition of a new forest technician, Neal Christensen, in the Van Buren District, and the addition of two bid sales. Woody Haynes, a logger working in the Van Buren district, has covered 1,003 acres of scattered blowdown, helping to increase the total harvest for the year.



A logging crew loads timber on Pioneer Forest, 2011. LAURI DREY



A tree marked for harvest, 2011. LAURI DREY



Location of timber sales on Pioneer Forest, 2016

BOUNDARY LINE MARKING

This past winter Pioneer staff completed 120 miles of boundary line maintenance. This is the most mileage completed in recent years and especially necessary because many of these miles had been destroyed by the windstorm in 2009 and required re-marking. Pioneer Forest has approximately 575 miles of boundary lines. Staff anticipates remaining on pace to continue meeting long-term goals for re-marking boundary lines every five years.

ADJUSTING PIONEER'S HARVEST

Leo Drey founded Pioneer Forest in the 1950s with the goal of promoting a single-tree selection method of timber harvest and maintaining an uneven-aged forest structure. From the 1960's through the 1980's Pioneer's harvested volume paralleled forest growth as calculated from the Continuous Forest Inventory, reaching 10 million board feet annually in the mid-1980's. A harvest rate that parallels growth is ideal to maintain an uneven-aged forest since the removal of some larger, older trees allows younger trees to grow and take their place. Periodic harvesting with an approximate 20-year reentry period ensures trees of all sizes remain on the forest, maximizing both ecological and aesthetic values.

After the 1980s, timber harvest dropped to an average of 5 million board feet each year for nearly 20 years. Growth, meanwhile, continued to steadily increase. Currently, Pioneer Forest is behind its original established harvest schedule, and there are more than 30,000 acres that are due for harvest. The slow pace raises concerns about the ability of the forest to continue regeneration, and these changing conditions could result in reduced forest vigor and increased tree mortality.

Addressing these issues will take time and experimentation. Increasing the timber harvest volume slightly this year is an important first step. Staff and timber crews will cover more acres, gradually increasing over time to move us closer to Pioneer's traditional harvest schedule. This will meet the original goals established by Leo Drey, and benefit the health and structure of the forest.

ECOLOGICAL RESTORATION OF SPECIAL DESIGNATION AREAS CONTINUES

The L-A-D Foundation hired two temporary stewardship crews this past year. In fall 2015 a crew of four was hired to conduct stewardship work in accordance with Pioneer Forest's management plan for special ecological management areas. Over the course of five weeks they prepared six units in the pine-oak special management area for prescribed burns, removed invasive red cedar trees from a glade on Jerktail Mountain, conducted trail maintenance on the Brushy Creek trail in conjunction with Sierra Club volunteers, and conducted one prescribed burn of five acres in the Virgin Pine area.

In spring 2016, another crew of four was hired for six weeks to prepare prescribed burn units and conduct prescribed burns, primarily in the Virgin Pine and Randolph pine-oak woodland management areas. This crew conducted five prescribed burns covering a total 1,200 acres. Three of these were conducted jointly with the National Park Service, and of these, two burns were part of efforts to restore the rare flowering plant, tall larkspur. This crew was also able to clear invasive cedars off glades in Pioneer Forest ecological management areas and clear downed trees from Cave Spring Trail.



Fall 2015 stewardship crew members, standing by Virgin Pine and Interpretive Drive sign. Left to right: Andrew Braun, Dee Van Huss, Chelsea Catalano, and Andrew Dockins. NEAL HUMKE



Spring 2016 stewardship crew members, left to right: Claire Ciafre, Calvin Maginel, Ali Morgan, Daniel Burch. NEAL HUMKE

MANAGING PINE-OAK WOODLAND ON PIONEER'S RANDOLPH TRACT

Missouri primeval forests once included an estimated 4-6 million acres of shortleaf pine, entirely within the Ozark region. In the early 1900s these open landscapes were characterized by tall pines, native grasses and forbs, and birds such as the brown-headed nuthatch, pine warbler, and the now-extirpated red-cockaded woodpecker. By the mid-1900s, conversion and overcutting had reduced pine-dominated forests to about 500,000 acres.

One of the best known, historic shortleaf pine sites is an area in Shannon County along Highway 19 south of Round Spring. During the 1930s these lands were owned by Pioneer Cooperage. By 1940 the Missouri Highway Department had acquired a narrow strip of uncut land, extending through the larger pine area, protecting it as a widely-recognized scenic corridor.

Beyond this scenic corridor, Millman Lumber Company had acquired the right to cut the pine. Pioneer Cooperage staff had the foresight to prevail upon the lumber company "to buy back enough mature seed trees of shortleaf pine to afford a seed source for the future." This amounted to 1076 trees on 3,200 acres, which became known to Pioneer Forest as the Randolph Tract. Later, in 1953, a massive wildfire burned across much of the Ozarks, including about 650 acres this tract, creating favorable conditions for pine seedlings to sprout, and many, now 60 years old, have grown well.

In 1954 Leo Drey acquired all of the Pioneer Cooperage land that had been sold to National Distillers, most of which has always been dominated by oak and hickory (predominantly white oak). However, on the Randolph Tract, the area south of Round Spring and the Current River, was the well-known "pinery" dominated by mature shortleaf pine. In 1996 the L-A-D Foundation purchased the 41-acre tract of virgin pine along both sides of Highway 19 from the Missouri Highway Department.

Shortleaf pine areas harbored plant and animal species rarely found elsewhere in Missouri. Notably, red-cockaded woodpeckers, which were first recorded in Shannon and Reynolds counties in 1907, were last seen in Missouri from this area along Highway 19 in 1946.



Virgin Pine Forest on Highway 19 between Eminence and Salem, Mo.

Postcard from Ozark Postcard Publishers, Monett, MO, circa 1930-1945, labeled "Virgin Pine Forest on Highway 19 between Eminence and Salem, Mo." BOSTON PUBLIC LIBRARY, TICHENOR BROTHERS COLLECTION



The stand of virgin pine along Highway 19 in the 1940s.
PIONEER FOREST ARCHIVE

"Apparently all subsequent records of red-cockaded woodpeckers in Missouri were from a virgin pine stand along Highway 19 near Round Spring in Shannon County, where three were observed on 7 June 1940 (Cunningham 1940), four on 17 June 1941 (Cunningham 1941), and five on 16 June 1946 (Cunningham 1946). This pine stand was logged in spring, 1946, except for a 1.6 km long by 123 m wide strip along Highway 19, 3.2 km south of Round Spring. No sightings of red-cockaded woodpeckers in Missouri have been published [since]."

Taken from a paper published in the *Transactions of the Missouri Academy of Science* by Eddleman and Clawson in 1987. The Cunningham references cited are from *Audubon* magazine published by the National Audubon Society and *Bluebird* which is published by Missouri Audubon.

Today, the pine woodlands scattered through their former range in Missouri are relatively limited compared to their past dominance. The Virgin Pine area and a portion of the surrounding Randolph Tract have retained shortleaf pine as a dominant and co-dominant species, in the context of the general oak-dominated Pioneer Forest lands. This special, historic piece of Pioneer Forest has received treatment to restore and maintain the natural pine-oak woodland along with grasses and forbs that were once prevalent. At this tract, the soils derived from the underlying Roubidoux sandstone bedrock provide a good seedbed for restoring the pine woodland and oak-pine forest. Management favoring pine began in the 1970s with commercial thinning for pine posts in Section 32 adjacent to the Virgin Pine, and was conducted again in the 1980s. In 2003, thinning for pine was again conducted for pine poles and some sawlogs, but did not address reproduction. Pioneer conducted its first prescribed fire here in 2009, a prerequisite for reducing leaf litter and preparing a seedbed for pine.

In April of 2015 the L-A-D Foundation Board of Directors approved a 500-acre core shortleaf pine area, designated as a Shortleaf Pine Ecological Management Area. At this site specialized management includes selective commercial thinning, salvage, periodic removal of small diameter hardwood saplings, and prescribed fire which continues to thin and progressively open the woodland canopy. Given the wide range of site variables - including soils, aspect, and landscape position - the woodland canopy ranges from all pine, mixed pine and oak, to all hardwood, interspersed with glade openings. Pine dominance is not the goal on every acre. For example, a scarlet oak-dominated canopy with smaller white oak and black oak will be managed for a transition to increase abundance of white oak and black oak while slowly opening the scarlet oak canopy. Management strategies are continually adapted to meet a range of circumstances, such as invasive species control and aesthetic preservation. Retaining some larger oaks for longer periods reduces competition from seedlings and re-sprouting hardwoods, and ensures a steady, gradual restoration of plant communities.

There are many signs of successful management: increased abundance of shortleaf pine seedlings, and a wide diversity of plant species, many of which are residual conservative plants of Ozark upland woodlands such as stiff aster, rattlesnake master, purple prairie clover, new jersey tea, lead plant, and cream wild indigo. Conservative species are those that are more likely to be found in intact, high quality natural areas. An increase in the number of conservative species is a strong indicator of overall increase of health in an ecosystem. Bird populations, such as turkey, red-headed woodpecker, and pine warbler, also have all recently increased in woodland pine management areas. Studies of this area are ongoing, and will inform future restoration. Although this area requires special stewardship, of a sort not typical of most of Pioneer Forest, it constitutes a remarkable, even unique, resource for the Forest, for the Ozarks, and for the natural diversity of the state of Missouri.



ABOVE LEFT—Female red-cockaded woodpecker, a species last seen in Missouri in 1946 in the Virgin Pine area off Highway 19 in Shannon County. These birds require open, fire-maintained, pine woodland with mature trees. This photo was taken at The Nature Conservancy's Piney Grove Preserve in Virginia, 2013. ROBERT B. CLONTZ
ABOVE RIGHT—Pine-oak woodland under management above Courthouse Hollow. GREG IFFRIG

“...this past September I taught a couple of Ozark plant ID sessions to MDC staff, and I needed a good pine woodland to show them and to look at plants. We decided to visit the main Virgin Pine Tract (at the parking lot with the trail) and I was very impressed with the recovery of native plants in this tract. A few years ago it was looking nice, but now it is really starting to express great diversity and abundance of native pine woodland forbs and grasses. It was an awesome teaching site.”

E-mail from Susan Farrington, Natural History Biologist, Missouri Department of Conservation, November 10, 2015



TOP RIGHT: *The Virgin Pine Area near sunset.* NEAL HUMKE
 CENTER LEFT: *Slender bushclover (Lespedeza virginica) on the Randolph Tract.* NEAL HUMKE
 BOTTOM LEFT: *Pipevine Swallowtail butterfly nectaring on wide-leaved mountain mint (Pycnanthemum albescens).* BOTTOM CENTER: *Purple prairie clover (Dalea purpurea), a more conservative species, with eastern tailed blue butterfly nectaring.* BOTTOM RIGHT: *Fire pink (Silene virginica), another conservative plant species on the Randolph Tract.* NEAL HUMKE

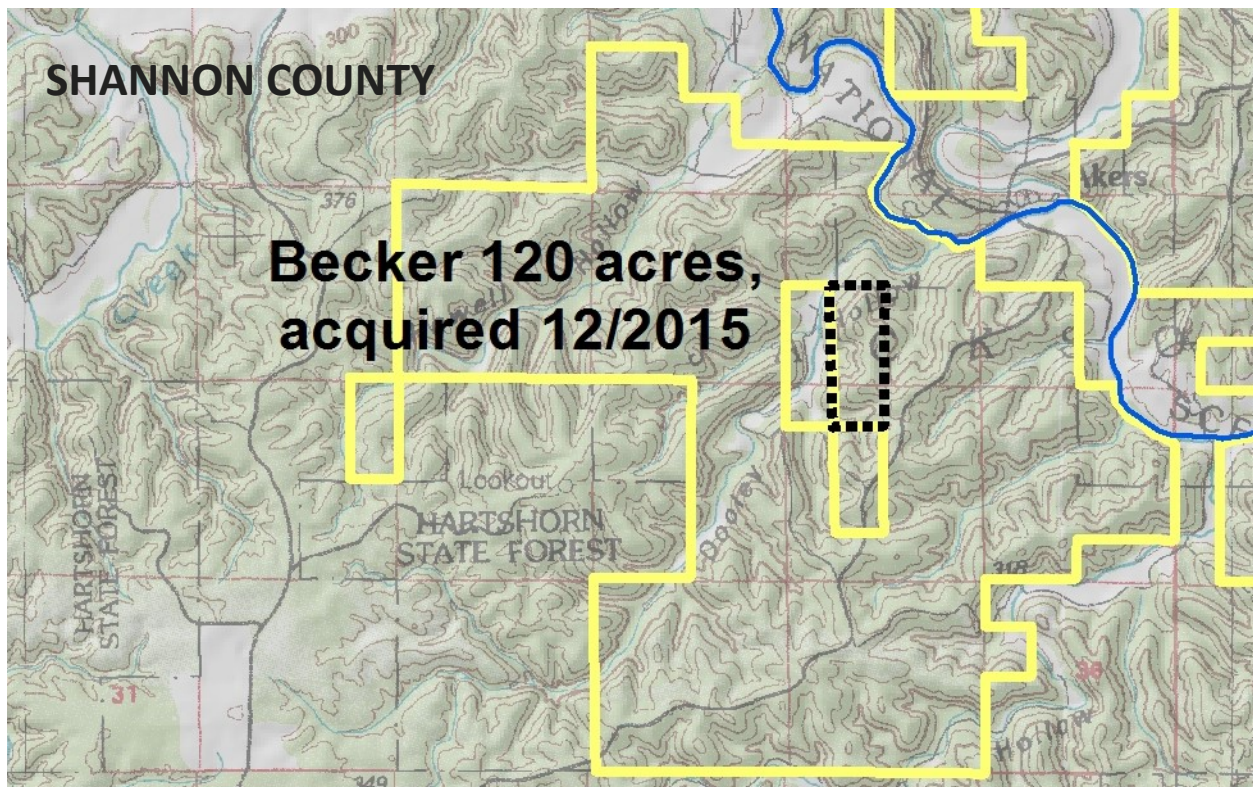
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GRANTMAKING AND COMMUNITY SUPPORT
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ADMINISTRATIVE ISSUES

Land Consolidation



Schneider property. GREG IFFRIG



ACQUIRED LAND NEAR THE UPPER CURRENT RIVER

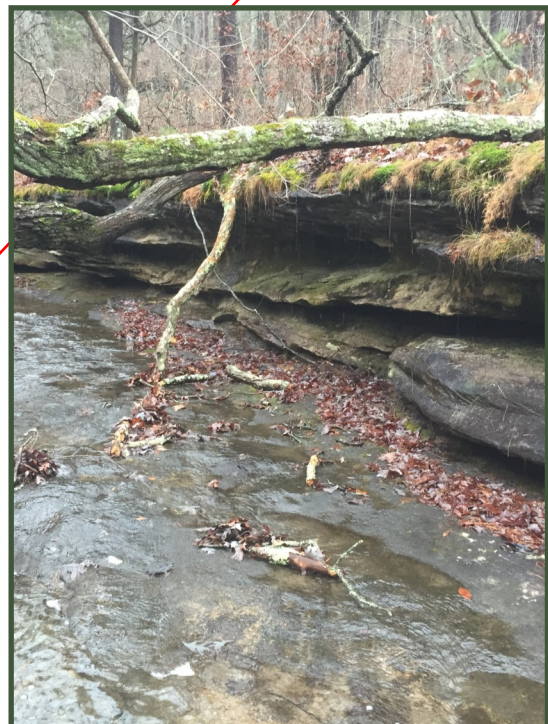
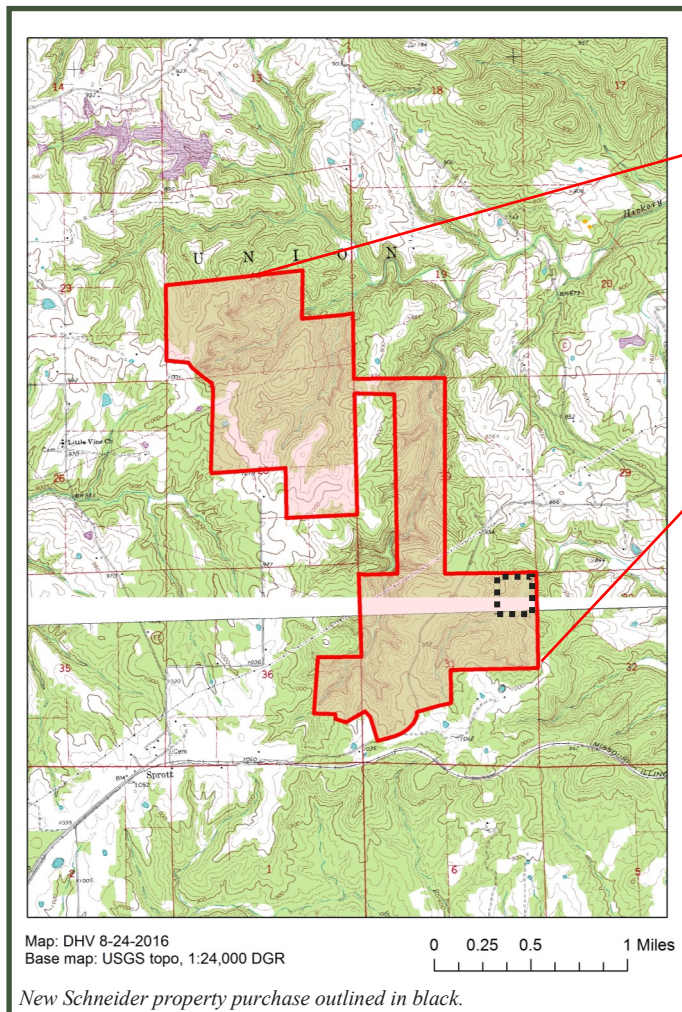
The Becker family contacted Pioneer Forest staff to see if there was interest in 120 acres of land they owned near the Current River. This forested piece of property was located within a much larger area owned by Pioneer Forest and just downriver from Akers Ferry. Pioneer staff relied on access through this privately-owned property from Highway K in order to reach its adjacent lands. Given these access issues and other consolidation priorities, this property was approved for purchase by the Board of Directors.

Staff estimate the timber had been cut 20-25 years ago, and is now young and vigorously growing. Owning this property improves access, facilitating our timber management program into the future. The length of our new boundary line does not change. Purchase of this tract was completed in December 2015.

IMPORTANT LAND ADDED TO HICKORY CANYONS NATURAL AREA

A comprehensive review of all L-A-D lands in 2012/2013 guides the Foundation's land consolidation. Included in that report is a small 40-acre tract adjacent to the Hickory Canyons Natural Area. Botanists who have explored and recorded plant species in this tributary of Establishment Creek for many years know the area as "Fern Valley."

This property, highlighted in black on the map below, is part of a farm owned by our neighbor Tom Schneider and was offered for sale to the Foundation. It features a high-quality LaMotte sandstone canyon similar in quality to the rest of our ownership and extends protection of the high-quality stream valley for one-fourth of a mile down Fern Valley. This acquisition was completed in June 2016. The overall size of this area is now 1,134 acres.



A tributary of Establishment Creek on the recently-purchased Schneider property, 2016. JOHN KAREL

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ADMINISTRATIVE ISSUES

Research



Giant swallowtail feeding on tall larkspur
SUSAN FARRINGTON



Claire Ciafre collects insects as part of an ongoing study on insect populations in Pioneer's pine-oak woodland ecological management area, 2016. NEAL HUMKE

INSECT SAMPLING ON PIONEER'S PINE-OAK WOODLAND ECOLOGICAL MANAGEMENT AREA

Two Lindgren funnel traps were placed in Pioneer's pine-oak woodland at the Randolph Tract for the 2016 season. One of those was in the burned and thinned Courthouse Hollow area, and the other in an adjacent area that is not being managed with fire. Every two weeks insects are collected from the traps to be identified later, providing Pioneer Forest with a list of insect species found at the site. Specimens will be archived. Volunteers Claire Ciafre and Lawrence Barringer are leading the project.

BOTANICAL STUDY AT THE PINE-OAK WOODLAND ECOLOGICAL MANAGEMENT AREA

A plant species list is being developed for Pioneer's pine-oak woodland in Shannon County. Input for this list comes from data collected by the Institute for Botanical Training and field observations by volunteers and Pioneer staff. As management of this pine-oak woodland area progresses, more sunlight is reaching the ground and many native plants are responding. To date 372 species have been found, many of which are woodland plants indicative of the site's quality, which have survived under a dense canopy for decades. Small dolomite glade openings add significantly to the flora.



Neal Humke and Calvin Maginel sample tall larkspur as a part of ongoing research by the National Park Service, 2016.
SUSAN FARRINGTON

NATIONAL PARK SERVICE PLANT MONITORING ON L-A-D LANDS

Ongoing monitoring of permanent plots at Jerktail Mountain and the tall larkspur sites near Aker's Ferry and Devil's Well was conducted again this year by the National Park Service and L-A-D staff. Both of the tall larkspur sites were burned in March of this year and have healthy populations. The plant is considered rare nationally, found mostly in the southeastern U.S. Missouri's populations are the western-most, with the next nearest plants found in Ohio and Tennessee.

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ADMINISTRATIVE ISSUES

Outreach and Education



Volunteers from Metro High School in St. Louis help clean up sinkholes in Perry County, 2016. GREG IFFRIG

PERRY COUNTY KARST SINKHOLE CLEANUP

After a successful inaugural volunteer day in spring 2015, L-A-D Foundation staff members teamed up once again this year with volunteers from the Middle Mississippi Valley Grotto and members of the Missouri Cave and Karst Conservancy to clean up several sinkholes in Perry County. On Saturday, February 27, staff and volunteers gathered to do cleanup on a one-quarter-acre sinkhole basin and in several smaller sinkholes, including one filled with agricultural chemical cans. About 1,000 pounds of trash were removed.

This work has been concentrated within the Berome Moore Cave drainage area on private property adjacent to the Foundation's Ball Mill Resurgence/Blue Spring Branch land. The caves and their underground streams are host to the endangered grotto sculpin fish as well as a variety of other cave life. The area's karst geology is highly porous, making it poor filtration for surface pollution and exacerbating the impact of sinkhole dumping on ground water quality.

Foundation staff is seeking funding to expand these efforts to assist other interested private landowners within the Berome Moore drainage area.



LEFT: Volunteers from the Middle Mississippi Valley Grotto remove trash from a sinkhole, 2016. GREG IFFRIG

RIGHT: Items removed from sinkholes include agricultural chemical drums, household trash, and appliances, 2016. GREG IFFRIG

GULF COASTAL PLAINS & OZARKS LANDSCAPE CONSERVATION COOPERATIVE

L-A-D Stewardship Coordinator Neal Humke attended the Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative at Lake of the Ozarks on February 3, 2016. This federally-funded regional initiative seeks to define and implement natural and cultural, science-based projects in the face of a changing climate and other threats.

PIONEER FOREST STAFF TOUR ARKANSAS SHORTLEAF PINE FORESTS

Pioneer field staff toured the Ouachita and Ozark National Forests March 7 and 8, 2016, with U.S. Forest Service staff to learn about shortleaf pine management and associated challenges. The tour was arranged by L-A-D Advisory Council member Jim Guldin, a researcher at the U.S. Forest Service Southern Research Station.



LEFT: Left to right - Pioneer Forest technicians Dusty Smith, Matt Skaggs, Mike Adams, and Chief Forester Brandon Kuhn discuss shortleaf pine management with Forest Service staff. Jim Guldin, also of the Foundation's Advisory Council, far right, is a Forest Service researcher at the Southern Research Station. JASON GREEN

BOTTOM LEFT: Left to right - Pioneer Forest technicians Dusty Smith, Mike Adams, Neal Christensen, and Matt Skaggs listen on the tour of the Ouachita and Ozark National Forests. JASON GREEN

BOTTOM RIGHT: Shortleaf pine seedlings carpet the understory after a prescribed burn on the Ouachita National Forest. JASON GREEN



PIONEER'S BARBEQUE MARKS TEN YEARS

Pioneer Forest's annual community dinner began in 2007, when the retirement of Clint Trammel prompted staff to assemble friends and family to mark the occasion. The new Pioneer office was completed, a dinner was planned, and invitations went out. That first year the group was small, but the success and good feelings that were enjoyed by everyone proved worthy of repeating.

The early years were an experiment in growing an event, calling in a caterer, borrowing tables and chairs from the Baptist Church, and crafting a mailing list. Attendance grew each year and Pioneer ended up buying chairs and tables, and arranging repairs to the warehouse.

This year marked our tenth annual community dinner. Tiny's Hillbilly Barbeque catered for us, and once again, Joleen and Brian Durham, owners of Piney River Brewing Company of Bucyrus, provided award-winning beer straight from the Ozarks. We counted a record attendance with more than 150 neighbors, friends, colleagues, and guests from around the Ozarks.

PIONEER FOREST'S TENTH ANNUAL BARBEQUE



TOP LEFT & TOP RIGHT: Guests visit outside the Pioneer warehouse. Guests included neighbors to Pioneer Forest, members of the Ozark forest industry, and representatives with partnering land management organizations.

MIDDLE RIGHT: Max Gorman serves cake.

BOTTOM RIGHT: A guest in line for dinner views information about the Pioneer Forest Virgin Pine area.

CENTER: Sherry Green (right) and L-A-D Foundation Office Manager Clare Holdinghaus (center) greet Thom Haines, U.S. Forest Service (left).

BOTTOM CENTER: Conversation between (from left) Calvin Maginel, Dan Drees, Top Draper, and Brian Brookshire, all of whom work in forestry-related fields.

BOTTOM LEFT: Pioneer Forest Manager Jason Green and daughter.

MIDDLE LEFT: Dinner was catered by Tiny's Hillbilly Barbeque again this year and served by members of the Gorman family.

PHOTOS BY DENISE HENDERSON VAUGHN



VISITS TO L-A-D FOUNDATION LANDS

Throughout the past year, various groups and individuals have visited, toured, worked, and volunteered on Pioneer Forest and other Foundation lands. These included:

- **October 9, 2015:** Dr. Irene Unger and nine students from Westminster College in Fulton toured Pioneer Forest with Forest Manager Jason Green to observe the Virgin Pine area and learn about the single-tree selection method of forest management.
- **October 17-25, 2015:** Volunteers with the Sierra Club, Missouri Chapter, conducted trail maintenance on the Brushy Creek and Blair Creek trails. This group also teamed up with the Ozark Trail Association to construct new trail near Current River State Park.
- **October 26, 2015:** Pioneer hosted a joint meeting of MoSAF and MCFA at our office in Salem. We had 47 in attendance, eight of whom were University of Missouri-Columbia forestry students.
- **March 16, 2016:** Volunteers from the Colorado State University Student Association of Fire Ecology toured the Pine-Oak Woodland management area to discuss fire and restoration efforts. This group of five students spent the week in the area helping the National Park Service and The Nature Conservancy with fire management.
- **April 28-29, 2016:** About 20 people with the Forest Stewards Guild and the Missouri Coalition for the Environment toured Pioneer Forest and stayed at the John Burroughs School Dreyland Camp.
- **June 1, 2016:** Fifteen students with the University of Missouri Forestry Camp toured Pioneer with MU faculty member Dr. Ben Knapp. Students learned about the general principles of logging, forestry, and uneven-aged silviculture. Students marked timber with Forest Manager Jason Green and Chief Forester Brandon Kuhn.
- **June 1-3, 2016:** Susan Farrington and Liz Olson of the Missouri Department of Conservation led 18 people on a tour of the Virgin Pine Area to demonstrate exemplary pine woodland as part of their Ozark Plant ID Workshop for Managers.
- **June 3, 2016:** About 20 people from the International Union of Forest Research Organizations visited Pioneer Forest to observe uneven-aged silviculture in oak-hickory forests. This tour is highlighted on page 16.
- **June 9, 2016:** About 30 people, mostly landowners interested in forestry and timber sales, participated in the Tip Top Tour with The Nature Conservancy, the Missouri Department of Conservation, and Shannon County Soil and Water District. Visitors learned about timber sale administration, forestry practices, logging practices, best management practices, taxes, and wildlife considerations.



Students from the University of Colorado joined the L-A-D stewardship crew on a tour of the pine-oak woodland management area on Pioneer Forest, March 2016. NEAL HUMKE



Agency managers learn to identify a variety of Ozarks plants at the Virgin Pine, area under the guidance of Susan Farrington, June 2016. NEAL HUMKE.

INTERNATIONAL WORKSHOP VISITS PIONEER FOREST

Pioneer staff hosted 18 scientists from around the world for a brief visit on June 3, 2016. The trip was planned by Advisory Council member Jim Guldin as part of the International Union of Forest Research Organizations' 10th annual International Workshop on Uneven-aged Silviculture. The group viewed several areas of Pioneer, seeing the forest "before cut" and "after cut" to learn more about the philosophy and appearance of Pioneer Forest's uneven-aged approach. Feedback from our visitors has been overwhelmingly positive, and future collaboration between Pioneer and the International Union of Forest Research Organizations is anticipated.

All photos below: DON BRAGG, U.S. FOREST SERVICE

"I know that, having seen the fine stands you took us to, I was not alone in thinking 'this is possible, after all, but I've never seen it before.' Perhaps you need to be reminded of the significance of the work you are doing, on an international level, particularly because it is a commercial operation with the figures to back the silviculture. I am so excited by what I saw."

GERAINT RICHARDS, HEAD FORESTER, DUCHY OF CORNWALL

"'Excellent' is an understatement. The 18 scientists, managers, and students attending the post-workshop field tour were absolutely impressed! ...One of the discussions in our van was that this was a break-through conceptual advance. European scientists and managers often wonder whether uneven-aged methods can be applied in oak stands, and they had thought, 'not likely.' You changed their minds. One colleague said that this was the first time he appreciated that oaks could be managed using uneven-aged methods."

JIM GULDIN, PHD., U.S. FOREST SERVICE, SOUTHERN RESEARCH STATION



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PIONEER FOREST MANAGEMENT
LAND CONSOLIDATION
RESEARCH
OUTREACH AND EDUCATION
STEWARDSHIP AND RECREATION
GRANTMAKING AND COMMUNITY SUPPORT
PUBLIC POLICY ISSUES
ADMINISTRATIVE ISSUES

Stewardship and Recreation



Prairie restoration near Ball Mill Resurgence, 2016. GREG IFFRIG

MISSOURI DEPARTMENT OF CONSERVATION ANNOUNCES BLUE SPRING BRANCH CONSERVATION AREA



A new sign was installed with the announcement of the Blue Spring Branch Conservation Area, 2016. GREG IFFRIG

In November of 2015 the management plan was adopted for the 280 acres owned by the L-A-D Foundation in Perry County. This land is leased to the Missouri Department of Conservation, and L-A-D Foundation staff worked with MDC staff to write and review the plan for these properties.

Conservation Department staff announced the opening of the Blue Spring Branch Conservation Area in January 2016 after approval from the Conservation Commission. This newly designated conservation area includes the 19.7 acres at Ball Mill Resurgence Natural Area and the nearby 71-acre Riney Tract, both leased from L-A-D.

Ball Mill Resurgence Natural Area is located about six miles north of Perryville, where a short walking trail leads visitors to explore the forested area and learn about how water influences the

karst landscape, both above ground and below. The Riney tract, less than a mile farther north on County Road 916, includes woodland stream frontage, restored native grassland, and property straddling Blue Spring Branch. From a high point of more than 580 feet visitors have an outstanding view across the Mississippi River to the river hills in Illinois.

CLIFTY CREEK NATURAL AREA

This 230-acre area in Maries County is one of the seven Natural Areas leased by L-A-D to the Missouri Department of Conservation (MDC). This spring MDC staff conducted a low-intensity prescribed burn on a 60-acre woodland area, in accord with our recently approved management plan. One other area at Clifty Creek has been managed with prescribed fire, a group of small glades which were first burned in January 2015.



Natural bridge at Clifty Creek. GREG IFFRIG

FERAL HOGS

Feral hogs continue to impact our lands and are especially damaging to some of the most biologically rich habitats, including glades, fens and seeps. They also directly impact native wildlife, including ground nesting birds, such as turkeys. The intelligent nature and mobility of hogs make them especially difficult to eliminate. New illegal releases of hogs and hunting pressure at other locations make this problem of regional importance. Staff is working with multiple agencies to manage this threat better.



These two photos, taken on a Pioneer Forest glade in 2016, illustrate the damage done by feral hogs.
NEAL HUMKE

MANAGING INVASIVE PLANT SPECIES

Invasive Korean lespedeza (*Lespedeza cuneata*), a plant species that prefers roadsides and open areas, is present on Jerktail Mountain and has been chemically sprayed since 2012.

Other invasive species management has been ongoing in the pine-oak woodland management area. Spotted knapweed (*Centaurea maculosa*) is being manually treated by pulling the plants and roots. Korean lespedeza (*Lespedeza cuneata*) and Johnson grass (*Sorghum halapense*) are both being chemically treated. Others we are beginning to treat include crown vetch, mimosa, and Japanese honeysuckle.



Crown vetch is among the invasive species found on Pioneer Forest, 2016. NEAL HUMKE



Lespedeza cuneata, successfully treated, 2016. NEAL HUMKE

ROGER PRYOR PIONEER BACKCOUNTRY

Management Plan Adopted

This year staff completed the Roger Pryor Pioneer Backcountry Management Plan which replaces the area's original plan developed in 2001. The new plan updates the inventory of trails, and proposes a new trailhead along the Camp Zoe Road and an additional trail to provide pedestrian access into the Big Creek Valley.

Traditional trail construction on Pioneer Backcountry lands has been done using hand tools, and that remains the preferred method. However, staff has researched construction by mechanical means and made allowance for its use on the Current River Trail connection, intended as a wider walking trail for pedestrian travel between Current River and Echo Bluff State Parks. Mechanical construction will also be tested on the Sugar Tree Hollow Trail to determine how and where it might be used elsewhere in the Backcountry. A map of the trails in the Roger Pryor Pioneer Backcountry can be found on page 37.

The new management plan also further defines trail standards for the Backcountry. A standard trail corridor shall be no higher than eight feet and no wider than six feet. The standard trail tread shall be constructed and maintained up to twenty-four inches wide. Finished conditions on Backcountry trails will, as much as possible, retain natural features, provide for an enjoyable walking/hiking experience, emphasize minimum development, and provide multiple points where natural features or materials along Backcountry trails are purposely retained to prevent unauthorized uses, such as motorized vehicles.

The plan includes a map of the more than 50 miles of public county roads. Beyond these county roads the long-range management goal emphasizes the Backcountry's undeveloped character for providing high quality non-motorized recreation throughout. Controlling unauthorized motorized intrusions is key.

The new plan provides for marking Pioneer's management routes that are for administrative purposes only. The plan also anticipates increased visitation and travel through the Backcountry following the opening of Echo Bluff State Park. The trails of the Backcountry are leased to the Missouri State Parks, and implementation will require close partnership with the Missouri Department of Natural Resources.



TRAILS

Adding Sugar Tree Hollow Trail

This new trail has been approved by L-A-D and Missouri State Parks with construction to be completed 2016-2017. Hikers will access the trail inside Echo Bluff State Park near the park's south entrance and hike a 5.3 mile loop heading northeast into Sugartree Hollow. The trail follows an upper slope above Sinking Creek, providing nice views of the valley. Along the northern portion of the trail hikers will cross a rich north-facing slope. This provides a good day hike, introduces visitors to the Roger Pryor Pioneer Backcountry, and will be managed by Missouri State Parks along with the other trails of the Backcountry.

Adding Current River Trail Connection

This new 5.25-mile walking trail includes a one-mile section across the Roger Pryor Pioneer Backcountry. Hikers on this trail walk through Echo Bluff State Park to the Current River in Current River State Park. Portions of this trail have been under construction. The completed trail is expected to be open in 2017, and will be managed by Missouri State Parks.



Mechanical trail work was used to complete this segment of the Current River Trail connector between Echo Bluff and Current River State Parks.

GREG IFFRIG

National Park Service Staff Approves

Current River Trail Across Ozark National Scenic Riverways

Once completed, the new Current River Trail will follow the Current River between Brushy Creek on the east side of the Backcountry and Current River State Park to the west. A significant portion of the trail crosses the Ozark National Scenic Riverways. Recently it was announced that the route across the national park has been approved by NPS staff at the Ozark National Scenic Riverways and volunteers are planning to begin construction. The Ozark Trail Association has obtained a grant for this work.

Portions of the Current River Trail have already been worked on by volunteers on Pioneer lands. Missouri State Park staff and Ozark Trail Association volunteers will be working on the trail across state and federal lands during the upcoming fall and winter months. This project is a collaborative effort between the National Park Service, Missouri State Parks, and the L-A-D Foundation.



Trail marker on the Brushy Creek Trail in the Roger Pryor Pioneer Backcountry, 2016. GREG IFFRIG



L-A-D Stewardship crew clears the Cave Spring Trail after flooding, 2016. CLAIRE CIAFRE

STEWARDSHIP AND RECREATION PHOTOS



TOP LEFT: *A caver explores Holmes Hollow Cave on Pioneer Forest.* DAN LAMPING

TOP RIGHT: *L-A-D spring stewardship crew members and five volunteers from the Colorado State University Student Association for Fire Ecology tour the Randolph Tract, 2016.* NEAL HUMKE

BOTTOM LEFT: *Hiker and dog on the Brushy Creek Trail in the Roger Pryor Pioneer Backcountry.* SCOTT MERRITT

BOTTOM RIGHT: *A southern flying squirrel on a shortleaf pine in the Virgin Pine area.* NEAL HUMKE

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PIONEER FOREST MANAGEMENT
LAND CONSOLIDATION
RESEARCH
OUTREACH AND EDUCATION
STEWARDSHIP AND RECREATION
GRANTMAKING AND COMMUNITY SUPPORT
PUBLIC POLICY ISSUES
ADMINISTRATIVE ISSUES

Grantmaking and Community Support



A 2015 Foundation grant supported three students from the Ozarks to attend the Green Leadership Academy for Diverse Ecosystems (GLADE), 2016. GREG SWICK

FOUNDATION GRANT PROGRAM

Since 1962, the L-A-D Foundation has given more than 120 grants totaling more than \$485,000 to a variety of nonprofit organizations for projects that benefit the Missouri Ozark region. L-A-D Foundation grants have supported natural and cultural resource conservation, including restoration of historic buildings, research into Ozark flora and fauna, trails and map development, and youth participation in outdoor leadership and environmental programs. For more information about the L-A-D Foundation grant program, please visit www.ladfoundation.org/grants.

2016 Grant Program

The Grants Committee received a record 28 letters of inquiry requesting a total of more than \$119,000 this spring. After consideration, the Grants Committee selected 17 finalists to submit full proposals by August 31, 2016. The Committee will review these proposals and make a recommendation for grant awards at the fall board meeting in October.



L-A-D office manager Clare Holdinghaus and stewardship coordinator Neal Humke present Denise Vaughn (left) with a grant check for the "Building on Karst in the Ozarks" video project, 2015. GREG IFFRIG

2015 Grant Recipients

In the fall of 2015, eight grants were awarded to the following organizations:

- **AmeriCorps St. Louis** – Purchase of tools for conservation projects in the Ozarks
- **Discovery Ministries** – Purchase of backpacks for outdoor education trips
- **Friends of the Eleven Point River** – Greer Mill porch and siding replacement
- **Ozark Resource Center: "Karst in the Ozarks"** – Educational video on karst geology in Missouri
- **Great Rivers Environmental Law Center** – Advocating clean water policies on the Current River as a part of Ozark National Scenic Riverways management
- **Greater Ozark Audubon Society** – Scholarships for three students from the Ozarks to attend the annual Green Leadership Academy for Diverse Ecosystems
- **Mark Twain Forest Watchers** – Enabling citizen participation in forest management on the Mark Twain
- **Missouri State University (Ben Wheeler, Ph.D.)** – Research into the amphibians and reptiles of Grand Gulf State Park

COMMUNITY SUPPORT

Pioneer Forest continues its history of supporting the Ozark region through community grants and scholarships to graduating high school seniors, this year contributing more than \$6,500 to the students and organizations below.

HIGH SCHOOL SCHOLARSHIPS

Bunker High School: Jessamy Lynne Stluka is enrolled at Moberly Area Community College. She is majoring in education.

Eminence High School: Olivia Basham will be studying nursing at Missouri State University - West Plains.

Summersville High School: Mackenzie Spencer is studying nursing at South Central Career Center before heading to Missouri State University.

LOCAL GRANTS

Summersville School Foundation: Pioneer Forest donated funds in January 2016 to enhance the safety and education of students at Summersville schools.

Bunker High School Project Prom: in February 2016, Pioneer Forest donated funds to help Bunker High School provide safe and supervised after-prom activities.

Ozark Heritage Project: Pioneer Forest supported the Ozark Heritage Project's cleanup work along the Ozark National Scenic Riverways in March 2016.

Eminence Chamber of Commerce: Pioneer Forest donated funds to support the Eminence Chamber of Commerce's Ozark Mountain Festival in April 2016.

Stream Team 1028: In May 2016, Pioneer Forest donated funds to support a cleanup of the Upper Current River.

Reynolds County Relay for Life: Pioneer Forest donated funds in July 2016 to support the Reynolds County Relay for Life. This event raises money for the American Cancer Society to support cancer research and cancer patients.

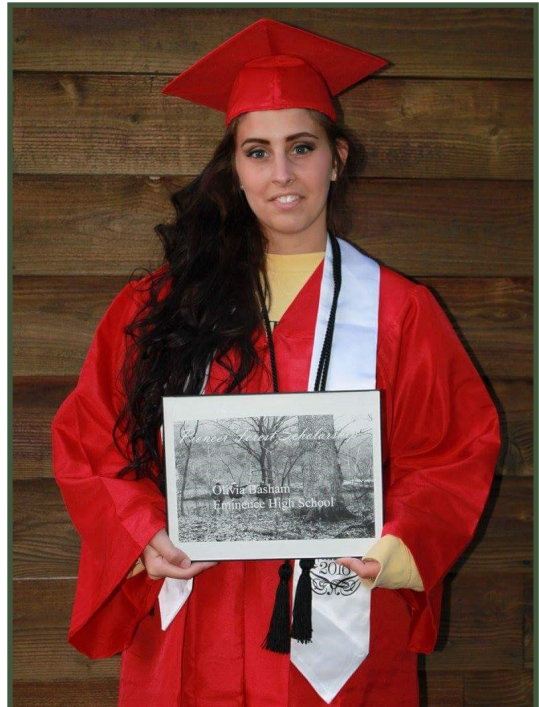
OTHER COMMUNITY SUPPORT

Kevin Watson Recovery Fund: In August 2015, Pioneer Forest donated to the recovery fund after a serious injury caused its contract logger, Kevin Watson, to miss considerable time from work.

Lanny May Family Fund: In April 2016, Pioneer Forest contributed to the May family after logger Lanny May, father of four, was killed working a logging job on private land near the Jacks Fork River.



Pioneer Forest technician Dusty Smith presents the Pioneer Forest scholarship to graduating Summersville High School senior Mackenzie Spencer, May 2016.
TANYA SMITH

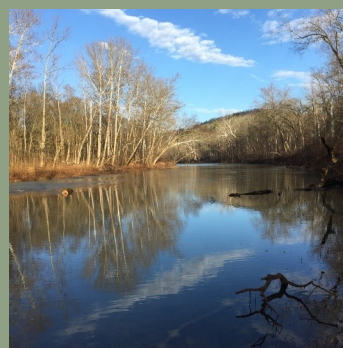


Graduating Eminence high school senior Olivia Basham receives the Pioneer Forest scholarship in May 2016.
DEBBIE BASHAM

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PIONEER FOREST MANAGEMENT
LAND CONSOLIDATION
RESEARCH
OUTREACH AND EDUCATION
STEWARDSHIP AND RECREATION
GRANTMAKING AND COMMUNITY SUPPORT
PUBLIC POLICY ISSUES
ADMINISTRATIVE ISSUES

Public Policy Issues



The Eleven Point River near Greer Spring Branch, 2016. GREG IFFRIG

GREER MILL AND DENNIG CABINS AT GREER SPRING BRANCH

The L-A-D Foundation has provided grant support to the Friends of the Eleven Point River for the past several years for their work stabilizing Greer Mill, an historic grist mill constructed from 1883 to 1899. With additional support from the US Forest Service, the local project, based in Oregon County, has attracted donations of money, time, materials, community support, and lots of outside attention to the needs of Greer Mill.

The land and mill were purchased from the Dennig family in 1988 by Leo Drey, and later transferred to the Mark Twain National Forest at a bargain sale. The mill, once overgrown and hidden by brush and thick vegetation, is now visible from Highway 19. Those driving by have noticed the new roof, repair to the siding, and, this past year, the new porch and new windows crafted to replicate the originals. Less noticeable are the meticulous repairs, replacement of structural support beneath the building, and repairs to the foundation.

An additional part of the nearly 7000-acre property is the Dennig cabins along the spring branch. Early this year the L-A-D Foundation submitted a recommendation to Mark Twain staff to stabilize and repair these historically significant cabins.

The cultural resources associated with the remarkable and undeveloped Greer Spring Branch area are nationally important, and are of special interest to the people of Oregon County. The L-A-D Foundation continues to encourage that they be properly maintained and believes that compatible uses will add economic value to the local economy. L-A-D Foundation intends to work towards that goal.



View of the dock from the cabin area along the bank of the spring branch, 2016. GREG IFFRIG



Collection of cabins built by the Dennig family in the early 20th century, situated along Greer Spring Branch, 2016. GREG IFFRIG

ELEVEN POINT NATIONAL SCENIC RIVER

A proposal for a new state park along the Eleven Point River in Oregon County raised concerns within the conservation community last year. New development could create demand for increased motorized access, including the possibility for vehicle intrusions along the banks. This would have significant impact on the long-standing, taxpayer-funded, national scenic river easements that currently protect the river.

Scenic easements along the lower Eleven Point River have been in place since 1979, ensuring that this area remains a natural and quiet refuge. While much of this land is privately owned, the U.S. Forest Service manages the restrictive easements that protect the banks. The nearly nine miles of river between Highway 160 and Highway 142 is the longest stretch of river corridor free of motorized intrusion in Missouri.

News of a new state park prompted Mark Twain officials to seek a qualified contractor who could independently compile baseline documentation along this stretch of the river. They asked L-A-D Foundation for help in the fall of 2015. After conferring with the Ozark Regional Land Trust, the L-A-D Foundation asked Kelly O'Mara to complete this work, with partial funding provided by the Foundation.

The report was completed in December 2015. It provides a record of conservation resources and man-made features along this stretch of the scenic river corridor. Based on this report, there were no observed industrial or commercial uses; no agricultural practices prohibited by the easement; no management, cutting, or land conversion; no building envelopes; no trash dumps, mining or industrial activities; no prohibited signs, or watercraft launches; and no utilities or associated wires, pipes, conduits, or associated structures. Twelve farm roads and ten structures were observed on private properties. All noted uses were consistent with the intent of Congress when the National Scenic River was established in 1967.

A new state park providing basic accommodations away from the river, along with interpretation of the long national history and aesthetic and environmental values of the Eleven Point River, could be compatible with the National Scenic Riverways, but conservationists from around Missouri and around the country will need to be vigilant to assure that the national conservation interest is maintained and protected.

OZARK NATIONAL SCENIC RIVERWAYS (ONSR) ROADS AND TRAILS MANAGEMENT PLAN

The L-A-D Foundation continues to monitor planning efforts underway at ONSR. On March 1, 2016, L-A-D Vice President Susan Flader and staff Greg Iffrig participated in a scoping session in Van Buren. National Park Service staff in Van Buren and from the Denver Service Center then began working to complete the Draft Alternatives for the Roads and Trails Management Plan. We understand that a document may be sent out for public review by the end of 2016.

For several years the L-A-D Foundation has been working with conservation organizations, including the Coalition for the Environment, Sierra Club, Friends of Ozark Riverways, and the National Parks and Conservation Association, to support stronger provisions in park management documents to restore and improve conditions on the Current River, and return more of the recreation in the park toward non-motorized, river-based experiences.

At a meeting in August 2016 with Cam Sholly, the Regional Director of the National Park Service in Omaha, these goals were articulated.

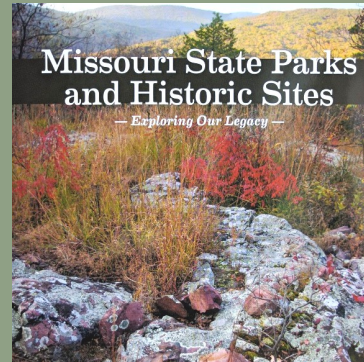


The lower stretch of the Eleven Point River is unique in its quiet, secluded, and wild nature.
GREG IFFRIG

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PIONEER FOREST MANAGEMENT
LAND CONSOLIDATION
RESEARCH
OUTREACH AND EDUCATION
STEWARDSHIP
GRANTMAKING AND COMMUNITY SUPPORT
PUBLIC POLICY ISSUES
ADMINISTRATIVE ISSUES

Administrative Issues



This new book features updated photos and new information.

L-A-D FOUNDATION SUPPORTS NEW BOOK

MISSOURI STATE PARKS AND HISTORIC SITES—EXPLORING OUR LEGACY



L-A-D Foundation Vice President Susan Flader signs a copy of the new state parks book at the Pioneer Forest community barbeque, 2016.
DENISE VAUGHN.



L-A-D Foundation President John Karel co-authored the new state parks book.
Photo 2007. GREG IFFRIG

L-A-D Foundation Vice President Susan Flader and President John Karel have completed a rewritten and definitive book on the Missouri State Park System. The original book, *Exploring Missouri's Legacy—State Parks and Historic Sites*, was published by the University of Missouri Press nearly 25 years ago. The second edition has been several years in the making, and includes new state parks and historic sites, updated information, and many new photographs.

The L-A-D Foundation has an ongoing interest in the state's parks and historic sites. In 1975, the L-A-D Foundation donated a lease of Dillard Mill State Historic Site in Crawford County to the Missouri Department of Natural Resources (MoDNR). Then, in 1984, the Foundation donated a lease of its lands at Grand Gulf State Park in Oregon County to the MoDNR. More recently, the Foundation donated a lease of its trails and trailhead at its Roger Pryor Pioneer Backcountry in Shannon County, a part of Pioneer Forest, enabling those visiting the newly-opened Echo Bluff State Park to explore the Backcountry.

Along with others, the Foundation supported the distribution of this new book, ensuring that school libraries across the state each had a copy.

Those interested in purchasing a copy of *Missouri State Parks and Historic Sites—Exploring Our Legacy* should contact the Missouri Parks Association.



Jerry Vineyard, Hugh Law, and Susan Flader at Pioneer's annual barbeque, 2007. GREG IFFRIG



Jerry Vineyard describes karst geology at Ball Mill Resurgence, 2010. GREG IFFRIG



Jerry Vineyard and Kay Drey discuss the Current River, 2011. SUSAN FLADER

JERRY VINEYARD RETIRES FROM THE L-A-D BOARD

After 20 years of dedicated service, Jerry Vineyard announced his retirement from the L-A-D Foundation Board of Directors at the Foundation's spring board meeting in May.

Jerry is a pioneer in Missouri's cave science. His master's thesis in 1963, "Origin and Development of Cave Spring, Shannon County," shed light on the water system of Cave Spring, owned by L-A-D, and Devils Well, owned by the Park Service. He authored *Springs of Missouri*, contributed to the revision of *Geologic Wonders and Curiosities of Missouri*, co-founded the Missouri Speleological Survey, served as Missouri State Geologist, and chaired the Missouri Natural Areas Committee.

Jerry joined the L-A-D Board in October of 1996. He chaired the Nominating Committee, was a long-time member of the Stewardship Committee, and since 2003 served as chair of the Grants Committee.

Jerry brought exceptional leadership to the Grants Committee using his diplomatic skill and good judgment to deliver L-A-D Foundation funds each year to organizations working on valuable environmental and cultural projects throughout the Missouri Ozarks. Over the years, he sought to consistently improve the grants program, and, during his tenure, the Foundation distributed more than \$355,000 in grants.

The Foundation and its lands are better as a result of his time on the Stewardship Committee. His knowledge of, and long-standing interest in, the wise stewardship and protection of natural areas benefitted the management of many of the Foundation's most important lands. In 2007, when the Foundation was considering the acquisition of a significant piece of land to the Ball Mill Resurgence Natural Area in Perry County, he generously offered his expertise and his time to help define the importance of the Perry County karst plain and to successfully secure funding.

Jerry always offered service with his characteristic wisdom, good humor, and grace. The Board and staff will miss his companionship on field trips where he shared his knowledge and enlightened everyone on Missouri's geologic wonders.

Although retired, Jerry remains part of the L-A-D family. The Board, advisory council, and staff have extended their appreciation for his 20 years of distinguished service. We all offer our very best wishes.



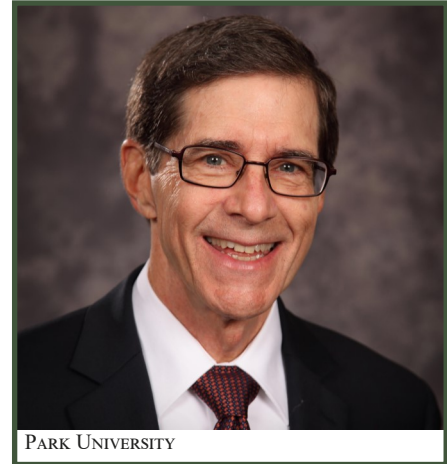
Jerry Vineyard (right) with George Bilbrey (left), a caver and neighbor to Pioneer Forest, at the 2009 Pioneer Forest barbeque. LAURI DREY

ROGER HERSHEY JOINS THE L-A-D BOARD OF DIRECTORS

Roger Hershey received his law degree from the University of Missouri-Kansas City in 1970. Most recently he has been Vice President for Entrepreneurial Ventures and Assistant Secretary to the Board of Trustees at Park University in Parkville, Missouri. Director Hershey was a founding shareholder and Director with King Hershey PC, a Kansas City real estate development law firm established in 1988. He also has practiced law with United Bank in Kansas City as Associate Vice President for Estate and Financial Planning.

Director Hershey brings experience from a long history of involvement with a number of nonprofit organizations, including the Great Rivers Environmental Law Center, the Jackson County Historical Society, the Independence Citizens for Streets and Parks, the Boy Scouts, and the Sierra Club at the state and national levels.

The Board approved Director Hershey's nomination at its meeting in October of 2015, with his term effective February 2016. We welcome him and look forward to working with him for years to come.



LEASE OF TRAILS AND TRAILHEAD AT THE BACKCOUNTRY AMENDED

Echo Bluff State Park is surrounded on three sides by Pioneer Forest lands which are a part of our Roger Pryor Pioneer Backcountry. This newest facility of the Missouri State Park System is expected to draw more visitors to the trails of the Roger Pryor Pioneer Backcountry which are available to the public through the Foundation's donated lease.

As part of the lease, the Missouri State Parks staff proposed two new trails. The extension of the Current River Trail between Echo Bluff and Current River state parks includes one mile of trail which will pass through the Backcountry just north of Echo Bluff State Park. The 5.3 mile Sugar Tree Hollow Trail will give park visitors at Echo Bluff the opportunity to start from a trailhead inside the park and head directly into the Pioneer Backcountry along a scenic tributary of Sinking Creek.

These trails will be under construction this fall and winter, bringing constructed trails within the Backcountry to more than 50 miles. The lease with State Parks was amended in March of this year to include these new routes. Other trails are being planned.



LEASE TO MISSOURI DEPARTMENT OF CONSERVATION (MDC) AMENDED

In 1988 the L-A-D Foundation initiated a donated lease of several natural areas and associated lands to MCD. That lease agreement continues to benefit the public and is amended from time to time. In March of this year a 3.27 acre tract of land was added to the Foundation's Ball Mill Resurgence/Blue Spring Branch area in Perry County.

NATURAL RESOURCE CONSERVATION SERVICE (NRCS) GRANT FUNDING

The L-A-D Foundation's Pioneer Forest successfully applied for federal funding to continue work on a portion of its pine-oak woodland ecological management area in Shannon County. NRCS approved \$27,000 to be used over the next two years.

The funding will be used to prepare and implement two prescribed burns totaling 426 acres to further the ecological restoration of our biologically rich Randolph Tract, as described on pages 6-8.



FINANCIAL CONSOLIDATION BENEFITS AND AUDIT

Fiscal year 2016 marked the first year of consolidated accounting and reporting between the L-A-D Foundation and Pioneer Forest. The change in bookkeeping has simplified monthly and yearly financial reporting. Additional changes made to reports further clarify spending toward our core mission by showing how expenses and income are distributed across focus areas: Sustainable Forestry, Stewardship, Outreach and Education, and Administration. This format for reporting is consistent with standard nonprofit best practice. Foundation investments are now reported separately each month. We also have established designated accounts for funding legacy retirement agreements and a separate reserve fund enabling continued operations in the event of an unexpected emergency or a downfall in timber markets.

After the last audit of the L-A-D Foundation in 2013, the Finance Committee recommended that we adopt a schedule of successive audits once every two years. The Board approved this schedule, and preparations are under way for the FY2016 audit.

L-A-D FOUNDATION JOINS THE CONSERVATION FEDERATION OF MISSOURI; PIONEER FOREST JOINS THE MISSOURI FOREST PRODUCTS ASSOCIATION

In 2016, the Foundation joined the Conservation Federation of Missouri (CFM) as an affiliate, and Pioneer Forest joined the Missouri Forest Products Association (MFPA) as an organizational member. Several board and staff members have been attending CFM meetings for a number of years, and several board and staff members have received the Federation's Conservation Awards. Their annual late winter meeting has been a good venue for connecting with Conservation Department staff, citizen conservationists, and organizations from across the state.

Recognizing that MFPA represents the industry we are so much a part of, Pioneer Forest joined that organization this year. MFPA has invited Forest Manager Jason Green to become a board member, and he has agreed to serve.

BY-LAWS AND STRATEGIC PLANNING

A committee chaired by Vice President Susan Flader is working with the Executive Committee to review and update the Foundation's by-laws. The most recent changes were approved by the Board in 2007. Revisions will be discussed and recommended to the board at an upcoming meeting.

Director Josh Reeves has reviewed with the board and staff the Strategic Plan adopted in 2013. Everyone has agreed to set a small amount of time aside each year at one or more board meetings to review progress, update goals, and, as needed, adopt new ones.

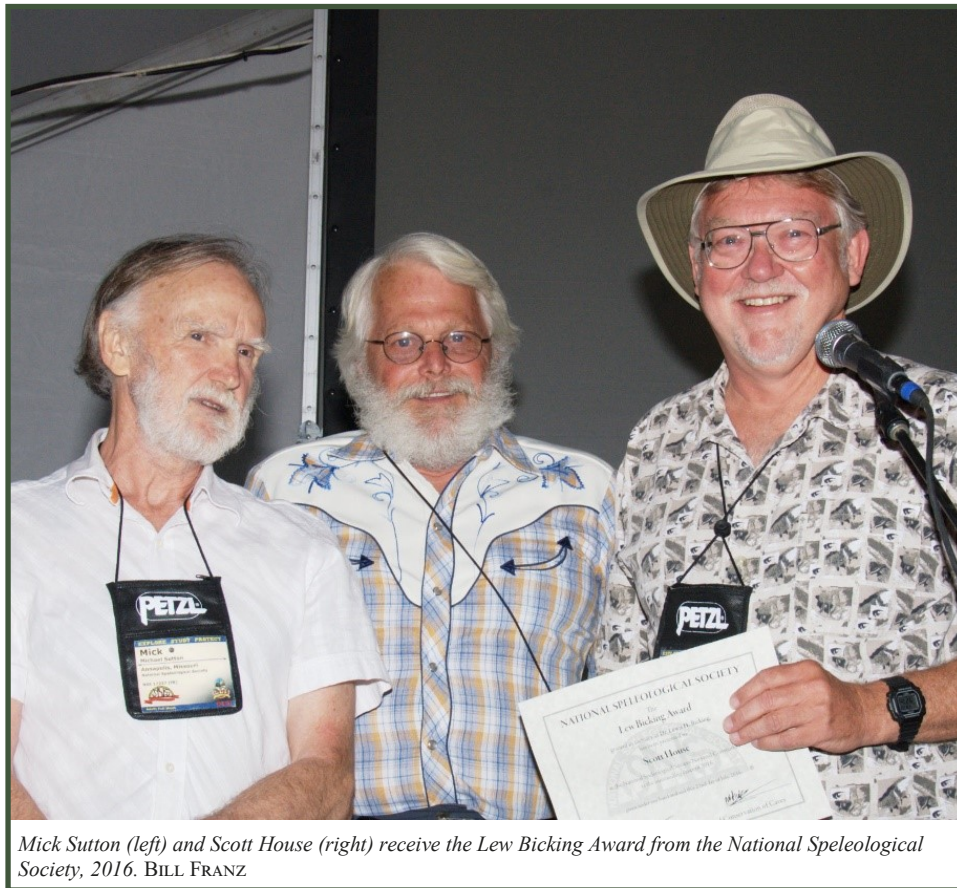
LONG-TIME COLLABORATORS HONORED BY NATIONAL SPELEOLOGICAL SOCIETY

Missouri caves have always benefitted from dedicated volunteers who explore, survey, document, and study them on public and private land. The L-A-D Foundation has worked with two of these volunteers who have been jointly honored this year by the National Speleological Society.

For more than 20 years, Scott House helped Pioneer Forest and the Foundation to enhance its internal collection of cave files and maps. He has updated digital files for all Missouri caves, including those on Foundation land, to a national standard and continues to share his findings on our lands with the Foundation. As Director of the Cave Research Foundation here in Missouri, Scott works with volunteers and caving groups, and develops strong working relationships with state and federal agencies and nonprofit organizations like ours.

Mick Sutton provided support for the Foundation's efforts to add important acres of karst plain to buffer its Ball Mill Resurgence Natural Area in Perry County. Mick is respected within the resource community and guides bio-inventory trips into many Missouri caves, including those on L-A-D Foundation lands.

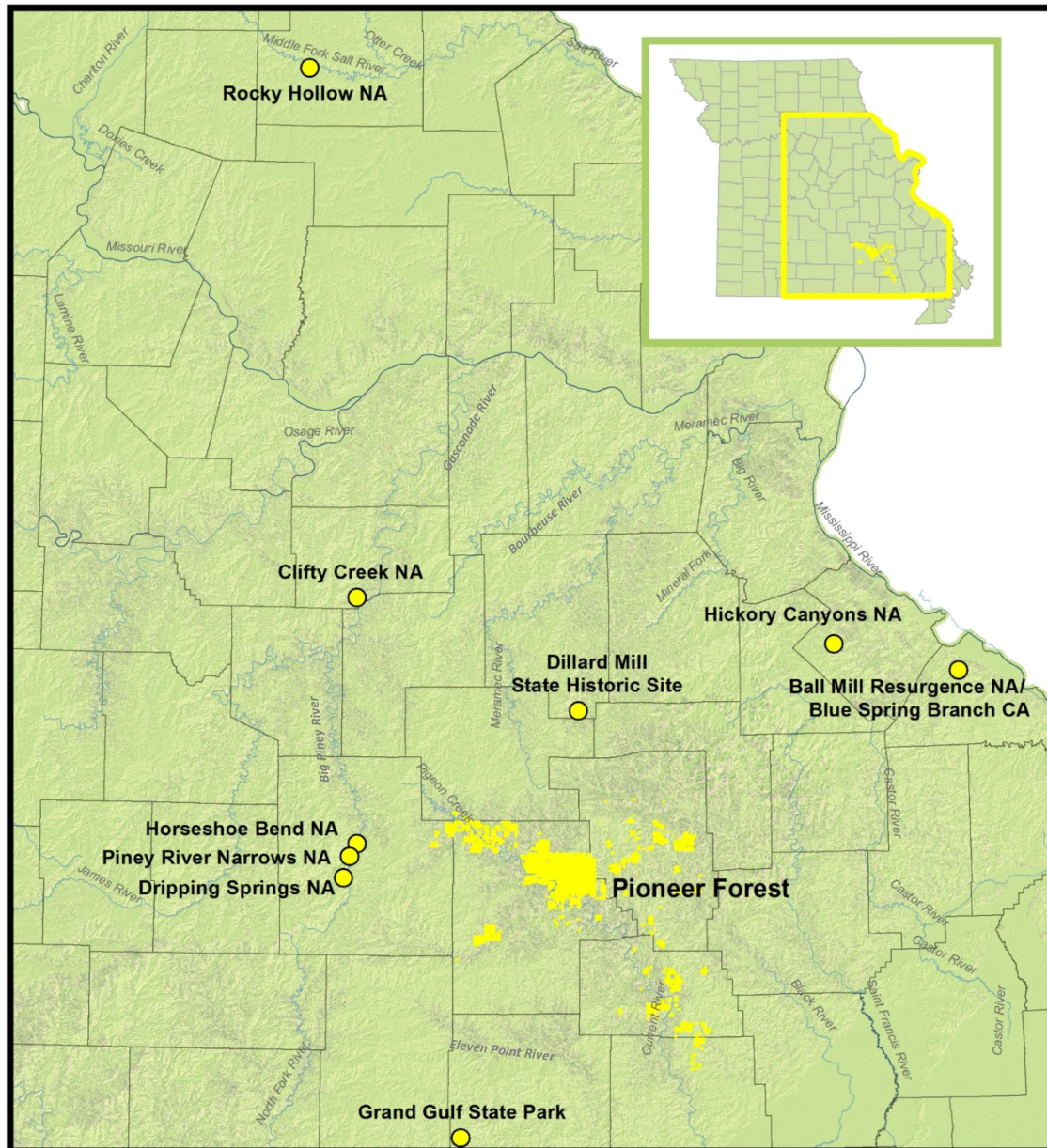
The award was presented to Scott and Mick at the 2016 NSS Awards Ceremony on July 22 in Ely, Nevada. Our congratulations and thanks for their continuing outstanding public service on behalf of Missouri's more than 7,000 caves.



Mick Sutton (left) and Scott House (right) receive the Lew Bicking Award from the National Speleological Society, 2016. BILL FRANZ

Appendices

MAP OF L-A-D FOUNDATION LANDS



LIST OF L-A-D FOUNDATION LANDS

<u>SPECIAL AREA</u>	<u>COUNTY</u>	<u>SPECIAL DESIGNATION</u>	<u>SIZE</u>
PIONEER FOREST AND ITS SPECIAL AREAS			143,158.25 ACRES
Blair Creek Hanging Fen	Shannon	Forest reserve, ¹ 2011	25 acres
Bluff School, Medlock Cave	Shannon	Forest reserve, 1995	51 acres
Cookstove/ Squaredance Cave	Shannon	Forest reserve, 2015	12 acres
Cunningham Sink	Shannon	Forest reserve, 2011	24 acres
Current River NA	Shannon	SAF Natural Area, ² 1955, and State Natural Area, ³ 1977, 10 acres; Addition, Natural Area, 2005, 255 acres; Total area	265 acres
Fishtrap Hollow and Marshy Spring Hollow Fens	Shannon	Forest reserve, 1995	45 acres
Jerktail Mountain	Shannon	Ecological management area, 2015	1,160 acres
Laxton Hollow	Shannon	Forest reserve, 1995	145 acres
Leatherwood Creek	Shannon	Forest reserve, 1995	1003 acres
Lily Pond NA	Reynolds	State Natural Area, 1975	8 acres
Old Schoolhouse Hollow Fens	Shannon	Forest reserve, 1995	140 acres
Pineknott Shortleaf Pine	Carter	Ecological management area, 2015	330 acres
Pioneer NA	Shannon	SAF Natural Area, 1964, and State Natural Area, 1977	20 acres
Sinkhole Ponds Complex	Reynolds	Forest reserve, 1995	45 acres
Sutton School Hollow Fens	Shannon	Forest reserve, 1995	75 acres
Tall Larkspur	Shannon	Ecological management areas, 2015	85 acres
Triple Sink/ Sunklands NA ⁴	Shannon	State Natural Area, 1980, 23 acres; Addition of 19 acres included as part of Sunklands Natural Area in 1999; Total area	42 acres
Tufa Creek	Shannon	Forest reserve, 2011	116 acres
Randolph Tract Pine-Oak Woodland	Shannon	Ecological management area, 2015	500 acres

Continued on pages 34 and 35.

<u>SPECIAL AREA</u>	<u>COUNTY</u>	<u>SPECIAL DESIGNATION</u>	<u>SIZE</u>
RIVERWAYS CORRIDOR LANDS			1,123.55 ACRES
Scenic Easements	Shannon, Carter	National Park Service, Ozark National Scenic Riverways, 1970	951 acres
Cave Spring	Shannon	Adjacent to the Current River	172.55 acres
LANDS LEASED TO THE MISSOURI DEPARTMENT OF CONSERVATION (MDC)			2,344.83 ACRES
Ball Mill Resurgence	Perry	State Natural Area, 1979, 19.61 acres; addition of 183.2 acres in 2007; addition of 77 acres in 2012 Total acres under lease	279.9 acres
Clifty Creek	Maries	State Natural Area, 1971 Total acres under lease	230 acres
Dripping Springs	Texas	State Natural Area, 1973 Total acres under lease	8.59 acres
Hickory Canyons	Ste. Genevieve	State Natural Area, 1973, 420 acres; addition of 560.91 acres in 1979; addition of 18.68 acres in 2013; addition of 94.75 acres in 2014; addition of 40 acres in 2016; Total acres under lease 1,094.34 Total acres	1,134.34 acres
Horseshoe Bend	Texas	State Natural Area, 1973, 69 acres Total acres under lease	233 acres
Piney River Narrows	Texas	State Natural Area, 1971, 50 acres Total acres under lease	258 acres
Rocky Hollow	Monroe	State Natural Area, 1973, 188 acres; National Register of Historic Places, 1974; Total acres under lease	191 acres
LANDS LEASED TO MISSOURI DEPARTMENT OF NATURAL RESOURCES			289 ACRES⁵
Dillard Mill	Crawford	State Historic Site, 1977	130 acres
Grand Gulf State Park	Oregon	National Natural Landmark, ⁶ 1971 and State Park, 1984, 159 acres State Natural Area, 1986, 60-acre portion Total acres	159 acres
Trails and Trailhead of the Roger Pryor Pioneer Backcountry	Shannon	Lease to Missouri State Parks, 2014 More than 50 miles of trails existing or under construction	
OTHER LANDS			267.42 ACRES
Lower Rock Creek	Madison	Wild land	226 acres
Virgin Pine	Shannon	Scenic remnant corridor	41.42 acres
TOTAL L-A-D FOUNDATION LAND OWNERSHIP			147,183.05 ACRES

Continued from page 33. Footnotes on page 35.

Footnotes from pages 33-34:

¹The concept of Forest Reserves was initially discussed by Pioneer Forest staff in 1994. In 1995 the management plan for each of these areas was described along with its boundaries. Following Leo Drey's agreement and the endorsement of the Foundation Board, the program was adopted. Additions were made in 2011.

²The Society of American Foresters' Committee on Natural Areas was organized in 1947.

³The Missouri Natural Areas System began in 1971 with the first areas owned or leased 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 the Missouri Department of Natural Resources to review and approve natural areas throughout the state under a variety of public and private ownerships.

⁴Originally 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.

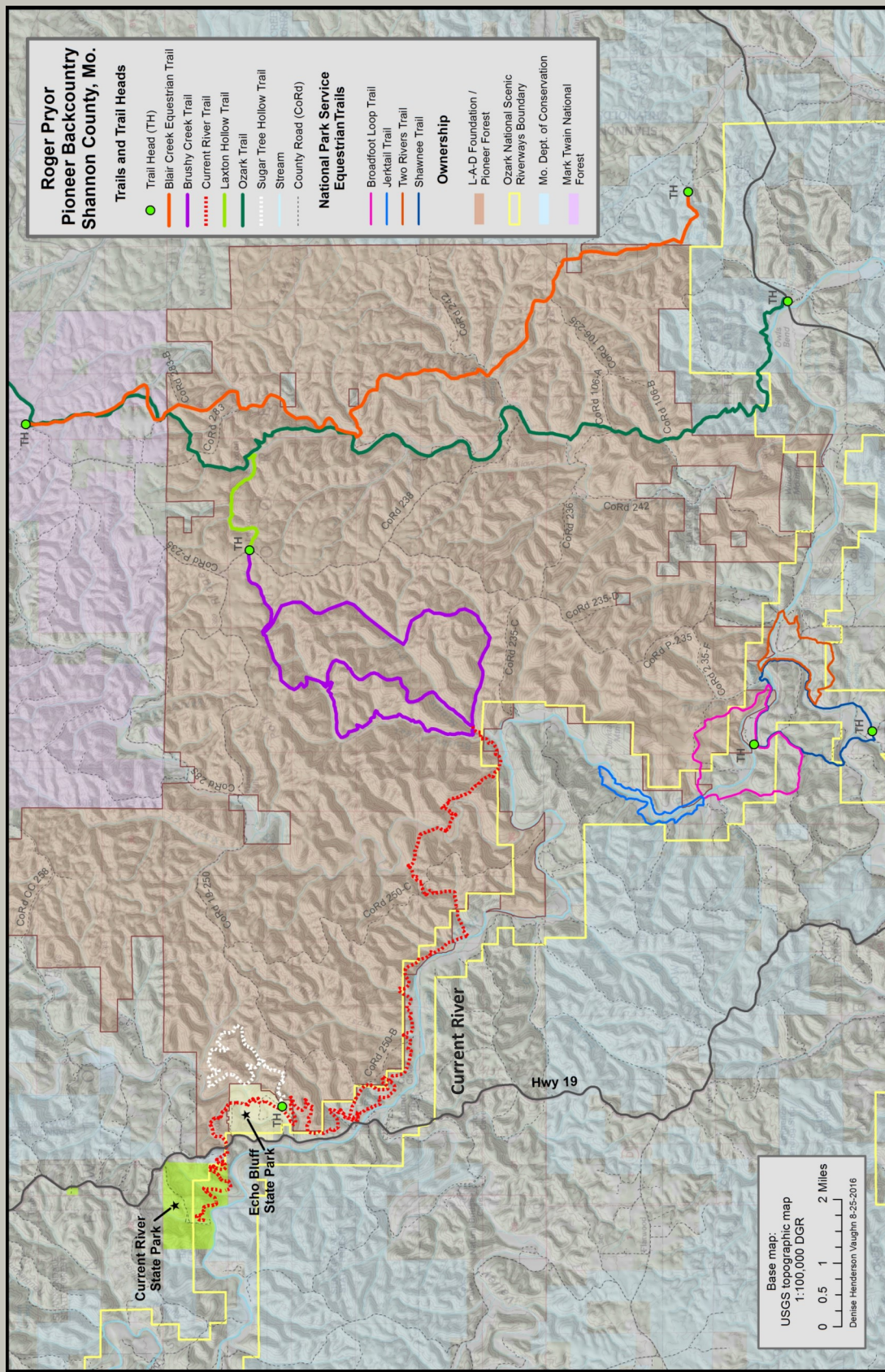
⁵State Historic Sites and State Parks are managed by the Missouri Department of Natural Resources, Division of State Parks. The Trails of the Roger Pryor Pioneer Backcountry are leased to the MoDNR; the lands of the Roger Pryor Backcountry are part of Pioneer Forest and are included in its acreage at the top of page 34.

⁶The National Natural Landmarks program is administered by the National Park Service. Grand Gulf is among fewer than 600 sites designated in the United States.

LIST OF L-A-D FOUNDATION TRAILS

- **Ball Mill Resurgence Trail**, Perry County: A one-mile trail loops from a small parking lot into the Blue Spring Branch valley and the resurgence.
- **Blair Creek Section, Ozark Trail**, Shannon County: The 12.5-mile route through Pioneer Forest was the very first section of the well-known Ozark Trail to be completed, in the late 1970s.
- **Blair Creek Equestrian Trail**, Shannon County: This 11.7-mile trail provides equestrians a route through the Backcountry, connecting Mark Twain National Forest and Missouri Department of Conservation lands.
- **Brushy Creek Trail**, Shannon County: A 21.4-mile nested loop trail, including a 1.9 mile spur leading to Bee Bluff, provides access to the interior of our Roger Pryor Pioneer Backcountry. Access to this trail is from the Himont Trailhead on County Road P-235 in Shannon County.
- **Cave Spring Trail**, Shannon County: A 4.6-mile moderately difficult round-trip hike connects Devils Well and Cave Spring, crossing Pioneer and National Park Service lands with access at Devils Well.
- **Clifty Creek Natural Area Trail**, Maries County: A 2.5-mile walk with scenic overlooks across the Clifty Creek valley, near the creek junction with the Gasconade River.
- **Current River Trail** (under construction), Shannon County: A 12-mile hiking route will connect Round Spring on the west side of Roger Pryor Pioneer Backcountry with the Brushy Creek Trail farther east.
- **Current River Trail Extension** (under construction), Shannon County: A one-mile segment of this trail crosses through the Backcountry, establishing a pedestrian route between Current River and Echo Bluff state parks.
- **Dillard Mill State Historic Site Trail**, Crawford County: A 1.5-mile trail winds through a hillside of oak, hickory, and pine, with benches for visitors to stop and enjoy the sights and sounds of the Huzzah Creek valley.
- **Grand Gulf State Park Trails**, Oregon County: From the parking lot, several short paths top the gulf and overlook the collapsed cave system. A short boardwalk/stairway (0.25 mile) leads to a viewing platform at the bottom of the gulf. A loop trail (0.80 mile) takes visitors across the natural bridge, alongside the gulf, and then through a very interesting mature oak woodland on the plateau.
- **Hickory Canyons Natural Area Trails**, Ste. Genevieve County: Two trails: one is an easy quarter-mile walk to a waterfall, and a second is a one-mile loop through the La Motte sandstone canyon.
- **Horseshoe Bend Natural Area Trail**, Texas County: A one-mile route leads from a small parking area across a scenic ridge that overlooks the Big Piney River and proceeds to the river bottom.
- **Laxton Hollow Trail**, Shannon County: A 2.3-mile route begins at the Himont Trailhead and leads to Laxton Spring before connecting with the Ozark Trail at Blair Creek.
- **Pioneer Forest Interpretive Drive**, Shannon County: A two-mile interpretive drive through Pioneer Forest shows visitors the half-century tradition of Pioneer's careful and conservative method of selectively harvesting trees. The Drive starts along the east side of Highway 19 near the Virgin Pine Walk.
- **Sugar Tree Hollow Trail** (to be constructed), Shannon County: A 5.3-mile route exploring a small side hollow to Sinking Creek. Access is from Echo Bluff State Park.
- **Virgin Pine Walk**, Shannon County: This one-mile interpretive walk south of Round Spring leads through an old shortleaf pine stand where several trees are aged at more than 200 years.

MAP OF THE TRAILS OF THE ROGER PRYOR PIONEER BACKCOUNTRY



For access to a digital map or to review a larger image go to: ladfoundation.org/pioneerforest/image/pryor_map_large.jpg

Glossary of Terms

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

Age class – An aggregation of trees essentially of 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 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 (biodiversity) – The existence of a variety of plants, animals, and other living beings in particular regions or ecosystems.

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

Blocking – Structural wood products used to package and ship manufactured goods.

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 (bf).

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

Buffer strip – A strip of vegetation that is left unmanaged or is managed to reduce the impact that 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 with regular frequency, over a long time period, to locate and estimate quantities by species, product, size, quality, and other characteristics.

CFM – Conservation Federation of Missouri

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 most often associated with an intact natural community. For example, non-conservative weedy plant species can be found along roadsides and old fields, whereas much more conservative plants would only be found in undisturbed natural areas. This may be better understood by comparing birds such as the common American Robin to the uncommon and more conservative Swainson’s 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).

CRF - Cave Research Foundation

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, and/or fires, that cause a significant change in the local or regional environment and the associated plants or animals.

Dolomite – A carbonate sedimentary rock consisting of double carbonates of calcium and magnesium. Associated in Missouri with karst topography.

Down woody debris – Woody portions of trees that have fallen 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 coarse woody debris.

Duff – Partly decayed organic matter on the forest floor.

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, and temporal change with no inherent definition of spatial dimension.

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

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

Even-aged management – A system of forest management in which stands of trees are maintained or cut with relatively minor differences in age, usually less than 10 percent 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 percent 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 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 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, this also includes species formally proposed for addition to these lists.

Fen – A type of wetland characterized by pH neutral or alkaline chemistry of the water. Fens are usually fed by mineral-rich groundwater sources and are dominated by grasses and sedges.

Feral – Having escaped or been released from domestication and become wild, for example feral hogs.

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

Forest – An area dominated by trees forming a closed canopy and interspersed with multilayered shade-tolerant sub-canopy trees, shrubs, vines, ferns and ground flora that is rich in spring ephemerals. Trees attain heights of 60 to over 100 feet.

Forest Reserve - Pioneer recognizes these high-quality, characteristic Ozark features and some typical forest features on its lands. These could be of state-wide significance, but recognized mainly for their regional importance or for their importance to the forest.

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 low in porosity and organic matter, and 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.

Glade – Open, exposed bedrock areas dominated by drought-adapted herbs and grasses in an otherwise woodland or forest matrix.

Growth – The change in volume for trees measured in one inventory and then re-measured in the next.

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 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).

Hibernaculum - A refuge, such as a cave, where an animal will hibernate during winter.

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 and health 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.

Igneous – A rock that has solidified from lava or magma.

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 examples are springs, losing streams, underground drainage and water reservoirs, caves, natural bridges, and sinkholes.

Kerf (also Kirf) - The width of a cut a saw makes in cutting through wood; in usage, a thinner kerf on a saw blade dramatically increases the yield on a given log.

Landscape – A physiographic unit 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 used to sprout roots and stems.

LEED – Leadership in Energy and Environmental Design; a certification system developed by the U.S. Green Building Council.

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 flow stream that gradually gets smaller or disappears due to the loss of some or all of the flowage into below-ground channels or caverns.

MBF – Thousand board feet.

MDC - Missouri Department of Conservation

MFPA - Missouri Forest Products Association

MMBF – Million board feet.

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).

Mesic – (Of an environment or habitat) containing a moderate amount of moisture.

NA - Natural Area. An area representative of certain biologic or geologic characteristics and designated for its high natural qualities.

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 ecosystem are present.

Natural regeneration – An age class of trees 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.

NRCS - Natural Resources Conservation Service, part of the U.S. Department of Agriculture.

NSS - National Speleological Society

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.

Prescribed Fire – (Prescriptive fire management) The knowledgeable and controlled application of fire to a specific land area to accomplish preplanned resource objectives.

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 – Grasslands interspersed with open-grown scattered trees or groupings of trees. They are strongly associated with prairies and are dominated by prairie grasses and forbs. Canopy cover is usually less than 30 percent, but greater than 10 percent.

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; the basis of uneven-aged management.

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.

Spatial – Of or relating to space, such as “the spatial distribution of individual trees.”

Stave - A narrow length of wood having a slightly beveled edge to form the sides of barrels, tanks, and pipelines.

Stream – 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 percent 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 percent to 90 percent of the time) in response to a fluctuating water table, with a scoured channel at least three feet wide. (3) Perennial streams are streams that flow year-round (more than 90 percent of the time), with a scoured channel always below the water line.

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

Suckering – The generation of sprouts that grow along the trunk of a tree, usually after a drastic change in growing conditions, such as a heavy harvest that allows 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.

Talus – A slope formed especially by an accumulation of rock debris.

Threatened species – Any species likely to become endangered within the foreseeable future and is 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 – A measurement of the variability of the land surface in a particular area that takes into account slope, shape, and aspect within the landscape.

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 are generally understory trees.

Uneven-aged silvicultural system - The application of a combination of actions that results 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, conifers, and flowering plants, which include deciduous trees.

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 onto a lower quality or more stable base and is 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.

WCS - Wildlife Conservation Society; a non-profit conservation organization whose mission is to save wildlife and wild places worldwide through science, conservation action, and education, and to inspire people to value nature.

Water bars – Used to prevent erosion on sloping trails or roads by reducing the velocity of water and the length of its flow; generally constructed at a diagonal across the path.

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 in Shannon County is an example of a watershed without a perennial stream.

Wetlands – Those areas 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, dead and lying on the forest floor.

Woodland – Generally defined as an area with less than 60% canopy cover, but greater than 30% canopy cover. They tend to have distinct layers: an open canopy, a sparse understory, and a dense groundcover of shrubs, forbs, grasses, and sedges.

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

October 2016.

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*.

This report has been printed on paper certified by the Forest Stewardship Council
as having 10 percent postconsumer recycled content.
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The L-A-D Foundation has benefited from the generous gifts of our founder, Leo Drey (1917 - 2015). Other individuals have given gifts of land, their time, and grants to assist us in our work with Ozark forests, protecting natural and cultural areas, and encouraging research, education, and programs that provide a positive influence in Missouri, especially the Ozark region. If you are interested in supporting our work, please contact us.