

# Missouri Resources

Winter 2018 • Volume 35 • Number 1





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**ABOVE**

A young guest imagines driving mining machinery at Missouri Mines State Historic Site, in Park Hills.

MoDNR PHOTO BY BEN NICKELSON

**ON THE FRONT COVER**

Fishermen brave the snow and cold for the opening of trout season at Roaring River State Park.

MoDNR PHOTO BY BEN NICKELSON

**ON THE BACK COVER**

A guest casts his line under the CCC bridge just after the opening whistle at Bennett Spring State Park on March 1, 2017.

MoDNR PHOTO BY BEN NICKELSON

**CONNECT WITH MoDNR**



**CONNECT WITH MoDNR STATE PARKS**



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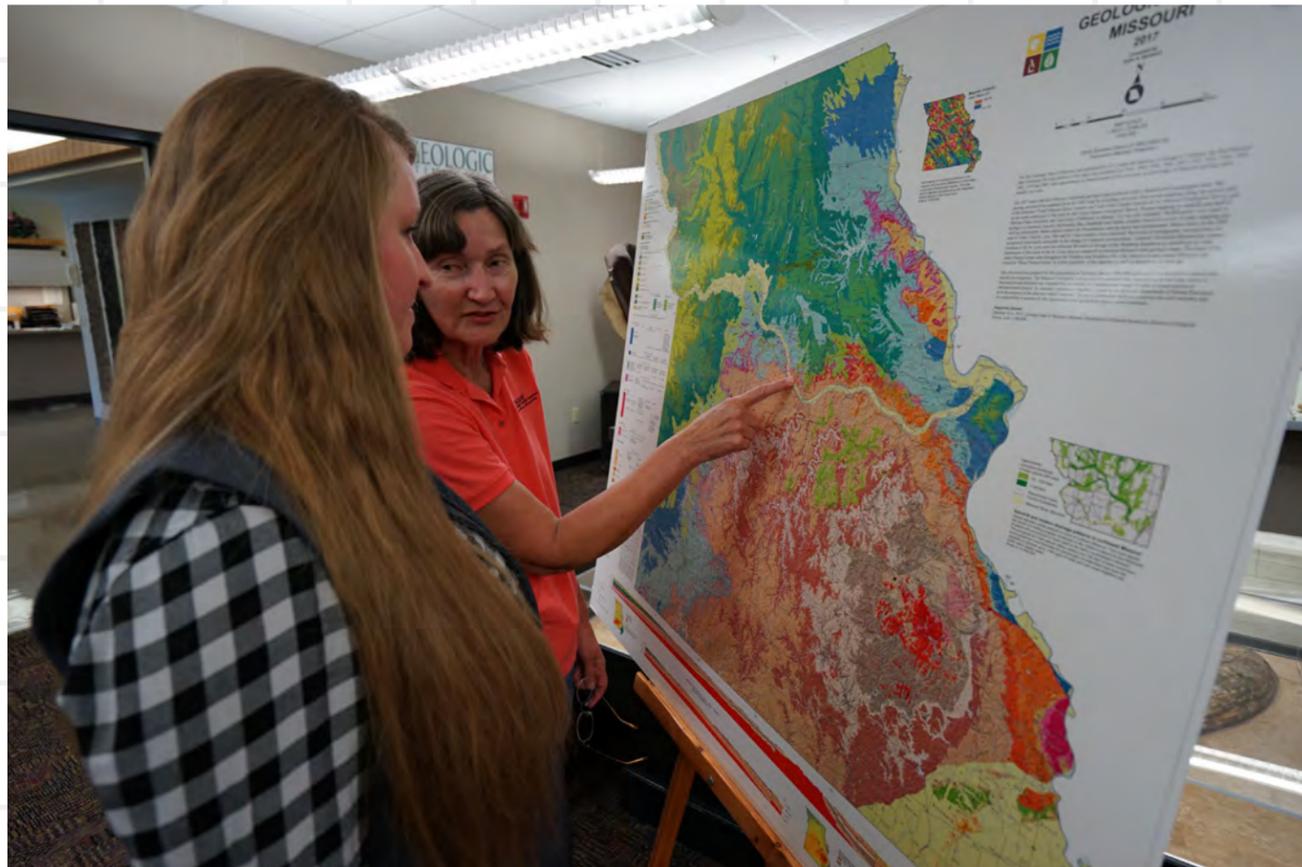
**ABOVE**

A barge and tug sit along the shore of the Missouri River in Jefferson City as ice drifts downstream.

MoDNR PHOTO BY ANDREW RICHMOND

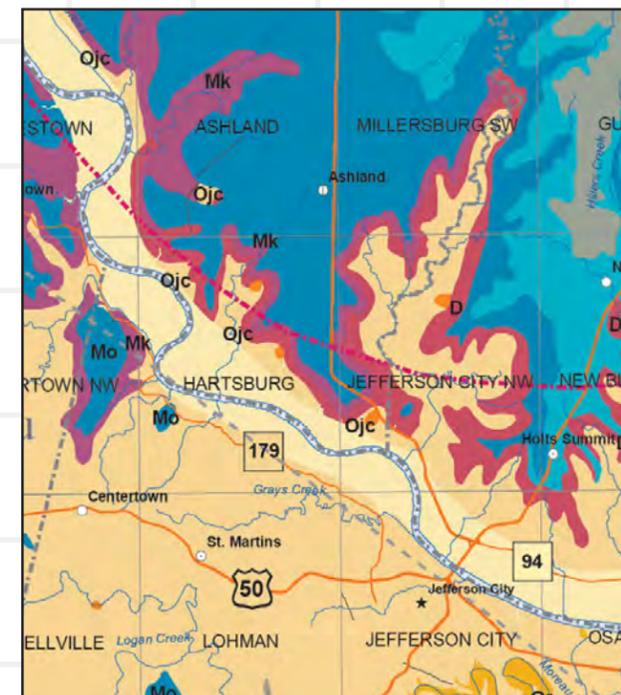
# 2017 STATEWIDE GEOLOGIC MAP OF MISSOURI

by Hylan Beydler

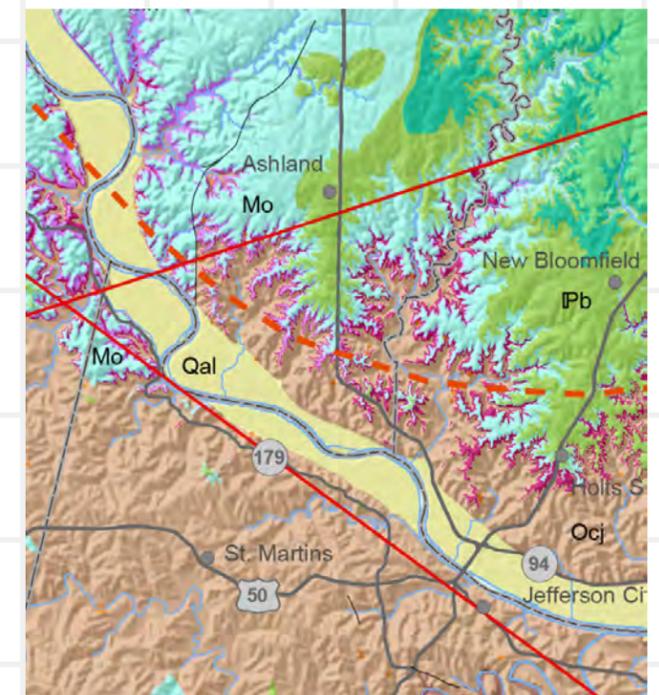


The 2017 Statewide Geologic Map is the first version where the Missouri Geological Survey incorporated shaded relief as part of the base map. Shaded relief depicts features on the surface, such as mountains, valleys, plateaus and canyons. Note the improved detail when comparing the same area on the 2003 and 2017 maps.

2003 STATEWIDE GEOLOGIC MAP



2017 STATEWIDE GEOLOGIC MAP



The 2017 Statewide Geologic Map of Missouri was recently published by the department's Missouri Geological Survey. This new map indicates the major types and locations of rocks present throughout the state, and their interrelationships.

The map is a base map in a continuing program of detailed geologic mapping. Geologic maps play important roles in business, science, education and a variety of other public policy concerns. They promote sound decision-making in a broad spectrum of activities that are directed toward benefiting the public and protecting the environment. The information provided by geologic maps facilitates wise management of the land and its resources.

(Above) Staff geologists Vicki Voigt (left) and Edie Starbuck (right) discuss enhancements made to the newest edition of the Statewide Geologic Map of Missouri. Missouri Geological Survey staff have been creating regional geologic, mineral resource and related maps for more than 150 years. The maps have improved as technological data gathering has advanced.

MoDNR PHOTO BY MARK GORDON

The 2017 map's detail aids in locating features such as the Missouri River bluffs that rise from the floodplain north of Jefferson City.

MoDNR PHOTO BY BEN NICKELSON



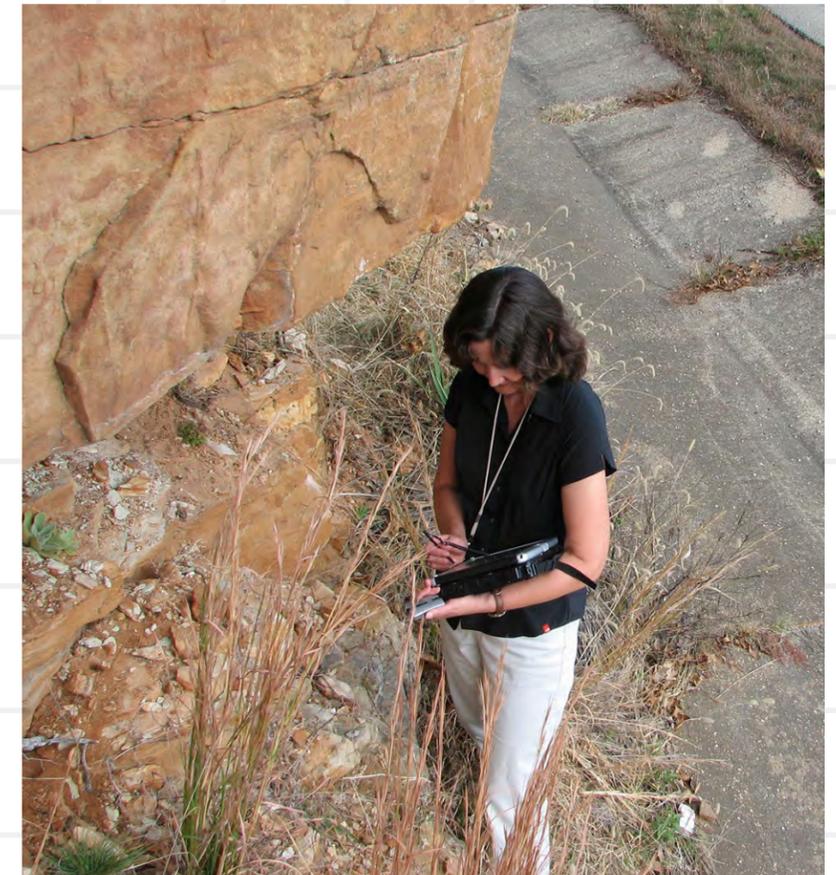
Missouri Geological Survey staff geologists meet with Henry A. Buehler (right), MGS Chief from 1908-1944, to discuss rock composition while conducting fieldwork.  
MoDNR FILE PHOTO



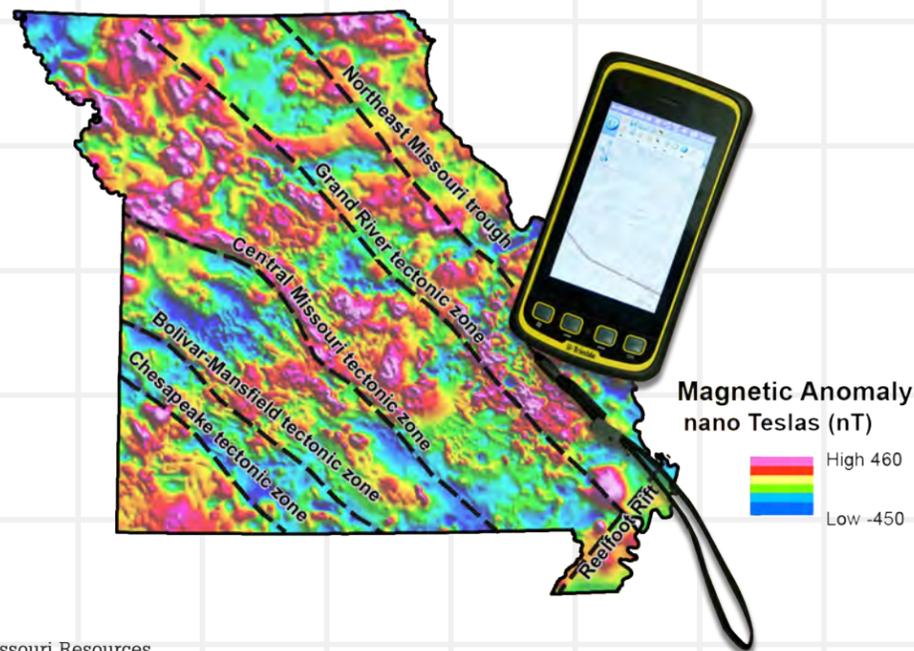
A staff geologist at Chasin cut the tunnel at Frummet Mine in Jefferson County in the 1800s. Field verification always has been integral to the process of professional geologic mapmaking.  
MoDNR FILE PHOTO



Edie Starbuck records observations in 2008 while doing research for a mapping project. Since then, advances in technology have led to smaller, high-performance handheld devices that help streamline the mapping process.  
MoDNR PHOTO BY MARK GORDON



Aeromagnetic surveys detect variations in the magnetic field caused by differences in mineralogy in basement (Precambrian) bedrock. This is the first time a magnetic anomaly map has been incorporated into the Statewide Geologic Map.



Kyle Ganz, staff geologist, uses a handheld device to collect high-accuracy GIS data such as geographic locations and attributes of geologic features to be applied to geologic maps.  
MoDNR PHOTO BY MARK GORDON

"We are very excited to publish the 2017 version of this map, as it is the first version to incorporate shaded relief as part of the base map. This gives the user a much greater ability to interpret the geographic landscape as it relates to geology," said Joe Gillman, state geologist and director of the Missouri Geological Survey.

The first geologic map of Missouri was published in 1872. Revised editions were published in 1892, 1894, 1896, 1904, 1912, 1922, 1926, 1939, 1961, 1979 and 2003, each representing an improvement of the previous as knowledge of Missouri geology grew steadily over time.

"The new Geologic Map of Missouri owes much to the 2003 version, the first digitally-compiled statewide geologic map of Missouri. Modifications seen on the 2017 map are based on the large amount of recent detailed geologic mapping

completed by the Missouri Geological Survey, the U.S. Geological Survey and staff and students from Missouri State University and University of Missouri at Kansas City," said Edie Starbuck, geologist, author of the map, and recent Missouri Geological Survey retiree. "Review of older detailed geologic maps resulted in additional revisions. The 2017 map incorporates updated stratigraphic nomenclature and recent reassignment of some units to different systems or series."

The map will be available in 2018 for free download. Print versions are available for purchase from [missourigeologystore.com](http://missourigeologystore.com) and at the sales counter at 111 Fairgrounds Road in Rolla. Learn more about geologic maps online at [dnr.mo.gov/geology/statemap/geomapping](http://dnr.mo.gov/geology/statemap/geomapping).

*Hylan Beydler is division information officer for the Missouri Geological Survey, a division of the Missouri Department of Natural Resources.*



(Far left) The city of Fredericktown digs holes for the planting of 560 trees.  
(Left) Josh Hundley, U.S. Fish and Wildlife Service, carries trees to a trailer for distribution.  
(Below) Leslie Lueckenhoff pats the dirt down around a freshly planted tree to ensure no air is left in the hole.

MoDNR PHOTOS BY AMY POOS



# A Forest Rises in the Floodplains

Cooperative effort returns former lead waste area to beauty

by Amy Poos

**M**adison County, Mo., is not known for its bridges, but for its legacy of lead mining. Throughout this county in southeast Missouri, land and natural resources have suffered and been scarred by historic mining activities, which left behind hundreds of acres of lead-impacted land. The site of the former Little St. Francis River Mine Waste Pile was once covered in chat, residual waste from early 20th century mining. Now, through the efforts of the Missouri Department of Natural Resources and the U.S. Fish and Wildlife Service (USFWS) who serve as natural resource trustees, and the city of Fredericktown, this once-blemished area has the hope of becoming a functional forest in the floodplain of the Little St. Francis River and will once again become a home and shelter for native creatures such as deer, squirrels and songbirds.

A team, consisting of the department, USFWS and the city of Fredericktown, planted 560 native trees at the site in just two days. The team lined out the restoration area in rows and marked spots for each tree. They operated



(Left) After planting, the trees receive protective tubing and mats to safeguard them while they adjust to their new “homes.”

MoDNR PHOTO BY LESLIE LUECKENHOFF

(Below) Leslie Lueckenhoff uses an iPad to collect GPS points for the location of all the newly planted trees.

MoDNR PHOTO BY JOHN NICHOLS



(Top) At the work site, 560 native species trees await planting.

MoDNR PHOTO BY JOHN NICHOLS

(Above) The planting team poses for a photo with an auger. From left: Scott Hamilton (U.S. Fish and Wildlife Service), Eric Gramlich (MoDNR), Josh Hundley (USFWS), Leslie Lueckenhoff (MoDNR), John Weber (USFWS), John Nichols (MoDNR), Chris Dudenhoeffer (MoDNR), Dave Mosby (USFWS), not pictured Amy Poos.

MoDNR PHOTO BY AMY POOS

augers, digging out holes for the 10 different native tree species selected for the site. Workers individually wrapped each tree to protect them from hungry wildlife and deer rubs. The final touch required securing mats at the base of each tree to keep away weeds. All of this accomplished, despite bone-chilling wind, drizzle, mud and cold. With cold noses, muddy clothes and aching backs, the team surveyed the floodplain, proud of the work done to restore and enhance the natural resources of the area and the hope and future of these trees.

How will the department know and track the success of these trees? Department staff will inspect the tree plantings biannually for five years to assess tree survival and will partner with members of the U.S. Geological Survey to assess invasive species abundance and growth surrounding the tree plantings. This project marks the start of the rejuvenation

of the former Little St. Francis River chat pile. Future projects include spraying to prevent invasive species, monitoring the success of the trees, and long-term protection of the site by the city of Fredericktown. The natural resource trustees will continue working with local interests to identify and implement additional restoration projects benefiting Madison County.

The Natural Resource Trustees funded the project using American Smelting and Refining Company (ASARCO) restoration funds. Restoration efforts at the site also were made possible by the U.S. Environmental Protection Agency completing the removal and cleanup of the mine waste at the site.

*Amy Poos is the division information officer for the department's Division of Environmental Quality, and served on the planting team.*





# Big Oak Tree State Park

## *Natural Diversity in the Bootheel*

by Brian Quinn



Early explorers to what is now known as the “Bootheel” region of southeast Missouri discovered a unique landscape where the Ozark hills drop off abruptly into flat flood plains covered with giant trees. The forest trees that took root here grew to enormous proportions in the fertile earth. Towering hickories and oaks form a canopy that soars high above the state park system’s only cypress swamp. Today, nature-seekers traveling through the vast agricultural area once called “Swampeast” Missouri will find a forested “island” known as Big Oak Tree State Park.

Trees in the park are unsurpassed in the state for their size, with a canopy averaging 120 feet and several trees soaring more than 130 feet high. Seven trees

qualify as state champions in their species; two of these rank as national champions. Ninety percent of the park is designated as a Missouri natural area because of its rarity and value in preserving this significant representation of Missouri’s exceptional natural heritage.

In addition to the towering hickories and majestic oaks, the rich soils provide habitat for green ash, swamp cottonwood, American elm, black willow, persimmon, bald cypress and patches of giant cane. An undergrowth of woody vines, such as poison ivy, Virginia creeper, wild grape and peppervine, covers much of the area.

Many swamp plants live in the water-soaked soil,

including swamp privet, buttonbush, lizard’s tail, swamp leather flower and ladies’ eardrop while aquatic liverworts and duckweed float on the surface of the water. The park protects 12 species of rare plants and animals, 250 kinds of plants and 25 mammal, 31 reptile and seven amphibian species.

A boardwalk winds its way through the park past some of the park’s largest trees and provides visitors a chance to view many common mammals that call the park home such as deer, raccoons, squirrels and opossums, along with the rare swamp rabbit. Amid the lofty trees live more than 150 species of birds, giving the park a national reputation among bird watchers. Several of the birds are considered rare in the state, including the prothonotary warbler, cerulean warbler,

(Far left) A massive bald cypress rises from the swamp at Big Oak Tree State Park in Mississippi County.

(Above) The 0.7-mile grated boardwalk trail makes for a beautiful and safe winter hike.

MoDNR FILE PHOTOS

12 species of rare plants and animals

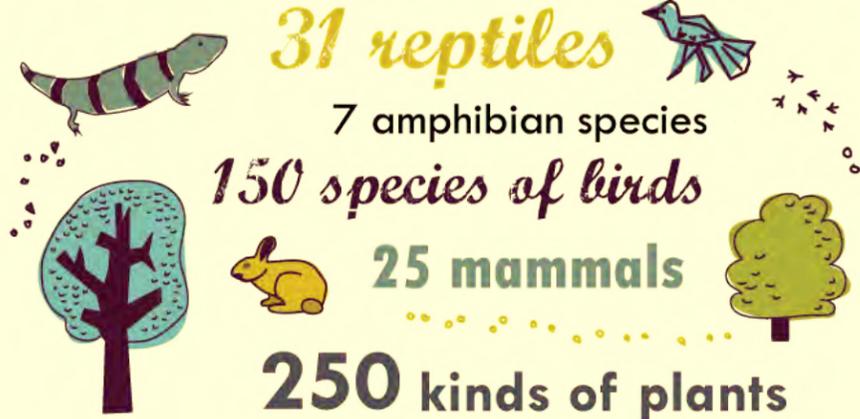
31 reptiles

7 amphibian species

150 species of birds

25 mammals

250 kinds of plants



red-shouldered hawk, Mississippi kite and fish crow.

An interpretive center along the boardwalk explains the forest and swamp ecosystem in the park. The park's 22-acre lake, Big Oak Lake, is stocked with catfish, bass, bluegill and crappie. Picnic sites, a picnic shelter and a playground, all nestled under towering trees, make the park a great place for a family to spend the day.

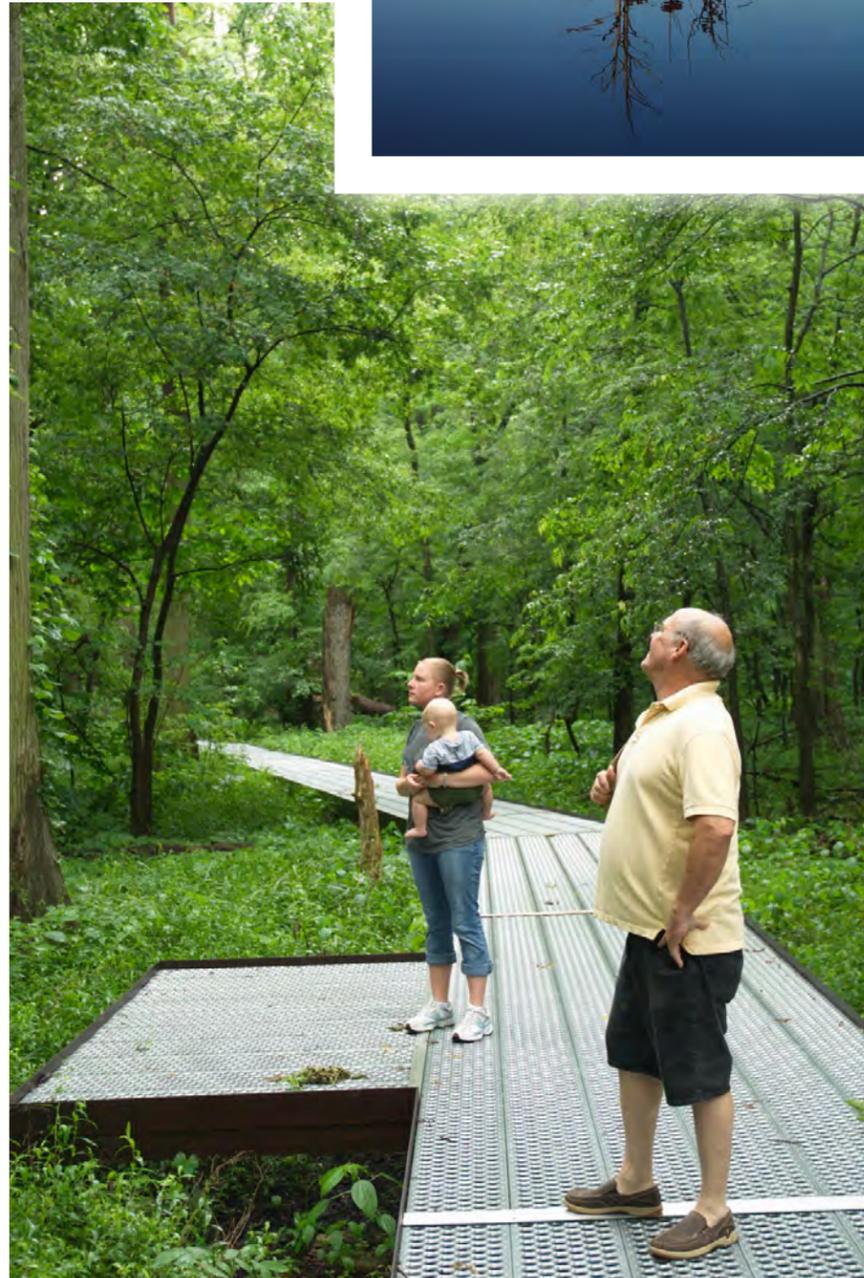
Brian Quinn is the division information officer for Missouri State Parks, a division of the Missouri Department of Natural Resources.

(Below) Big Oak Tree State Park appears as an island of trees in an ocean of farmland in southwestern Mississippi County.

(Top right) The park features the only bald cypress swamp in the state park system.

(Right) The boardwalk begins in a mesic woodland community of oak, hickory and sugarberry trees, and giant cane. It then passes through a bottomland forest of bald cypress and pumpkin ash.

MoDNR FILE PHOTOS



# Capturing the Heart of Missouri

## 2017 MissouriDNR Photo Contest

by Renee Bungart

**“A good photograph is one that communicates a fact, touches the heart, and leaves the viewer a changed person for having seen it. It is, in a word, effective.”** - Irving Penn, American Photographer

Each year, I look forward to coordinating the Missouri Department of Natural Resources' MissouriDNR Photo Contest. The photographers who capture the heart of Missouri and the people who enjoy it in all of its glory continue to touch my heart and reaffirm the importance of protecting Missouri's natural resources. This year was no exception.

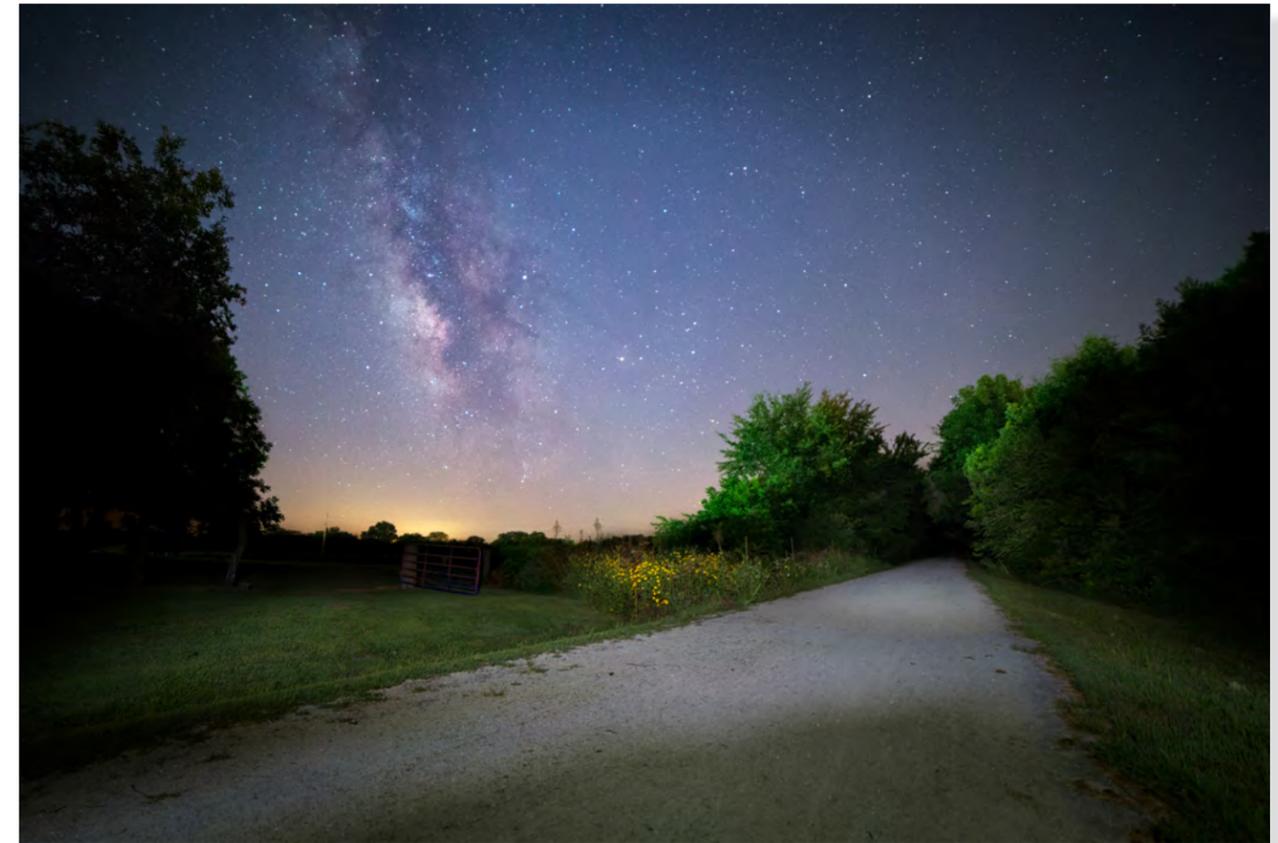
The department asked amateur photographers to photograph the beauty found in Missouri and selected first, second and third places, as well as honorable mention in three categories – Natural Resources, Unique Places and People Enjoying Missouri's

Outdoors. We received 496 photographs in total.

Congratulations to the winning photographers and all of those who participated in the contest. See the top 10 photographs selected in each category and learn about the 2018 MissouriDNR Photo Contest by visiting [dnr.mo.gov/photocontest](http://dnr.mo.gov/photocontest).

From the Milky Way over the Katy Trail and Echo Bluff state parks to snagging a trout in one of Missouri's cool-water streams to a hot air balloon ride, these photos were effective at capturing the heart of Missouri.

## Natural Resources



**First Place – Michael Edwards, Sedalia**

*Milky Way Rising Over Katy Trail* Pettis County, Katy Trail & Sacajawea Intersection / Sedalia

## Natural Resources, *continued*



**Second Place –**  
**Eric Nichols,  
O’Fallon**  
*Lone Fisher*  
Taney County  
Lake Taneycomo



**Third Place –**  
**Jennifer Mishra, Edwardsville**  
*Balloon View*  
Near Byrnesville



**Honorable Mention –**  
**Deborah Lucia, Fulton**  
*Silhouette at Dusk*  
Callaway County

## People Enjoying Missouri’s Outdoors



**First Place –**  
**Marcia Herx,  
Barnett**  
*Fishing with Papa*  
Bennett Spring  
State Park



**Second Place –**  
**Rebecca Stroud,  
Philadelphia**  
*Caught by Surprise*  
Marion County

**People Enjoying Missouri's Outdoors, continued**

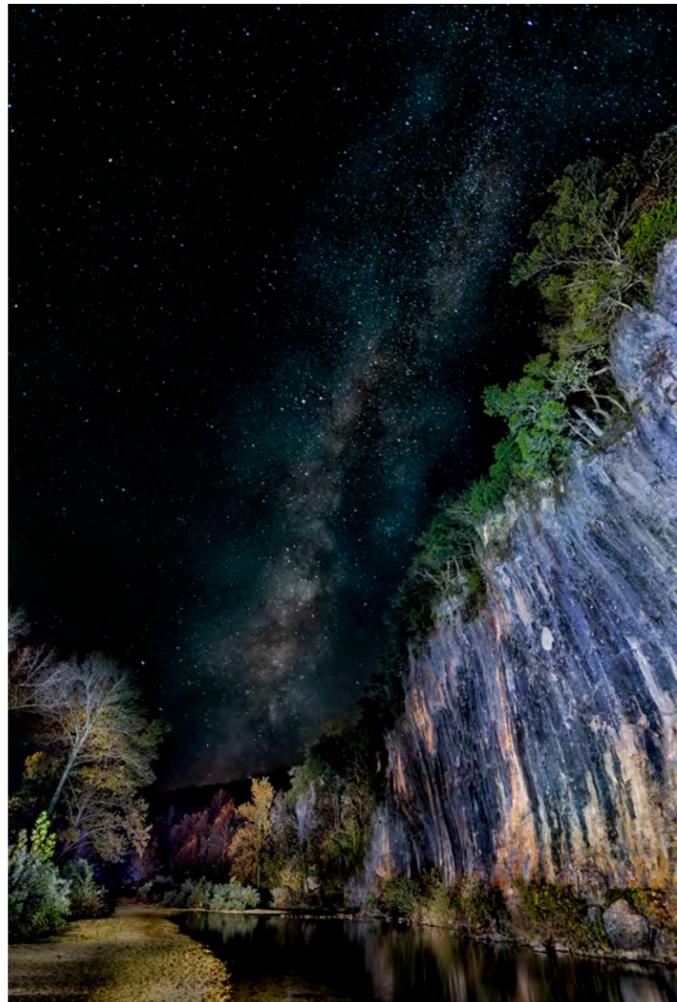


**Third Place –**  
**Mike Bardot, St. Louis**  
*Personal Shell*  
 St. Louis



**Honorable Mention –**  
**Chet Hicks,**  
*Foggy Fishing Morning*  
 Bennett Spring State Park

**Unique Places**



**Second Place –**  
**Alice Robison, West Plains**  
*Echo Bluff Under the Milky Way*  
 Echo Bluff State Park



**Honorable Mention –**  
**Doug Schutjer, Doe Run**  
*Times Are a Changin'*  
 Missouri Mines State Historic Site



**First Place – Joseph Howard, St. Louis**  
*Waterfalls at Taum Sauk Mountain* Taum Sauk Mountain State Park



**Third Place –**  
**Jack Eads, Rocheport**  
*Missouri River Slough*  
 Katy Trail State Park, Rocheport, Boone County



### Conulariid Jellyfish

Jellyfish are primitive, tentacled, free-swimming invertebrate animals (Phylum Coelenterata, Class Scyphozoa) that have inhabited the marine environment for about 600 million years. Most of them are entirely soft-bodied and lack any kind of tissue that is capable of withstanding decay long enough to become fossilized.

The fossil record of soft-bodied jellyfish is scant, so scant that few taxonomic genera have been recognized. However, one unusual and extinct taxonomic order of jellyfish – the Conulariida – is represented fairly well in the fossil record. Conulariids existed from Paleozoic Middle Cambrian through Mesozoic Early Triassic, 510 to 250 million years ago. They are unique among jellyfish in having a thin but tough outer covering (periderm) composed of chitin hardened to some extent with phosphatic mineralization. As a result, they are prone to becoming fossilized. Indeed, the periderms of conulariids dominate the fossil record of jellyfish, with about 20 taxonomic genera recognized based on periderms. However, fossilized soft body parts of conulariids are not preserved and remain unknown.

Conulariid periderms have a four-sided pyramid shape that typically is elongated from apex to opposite end (aperture). In one unique genus, the pyramid is so squat as to be nearly flat. Periderm length ranges from 0.3 to 16 inches, though 1.5 to 4 inches is the norm. If you sliced across the periderms, they appear as squares or rectangles or even parallelograms. The outer surface usually is marked with grooves and ridges. When threatened the animal could close its aperture end by bending and folding the adjacent periderm inward. The aperture region of the periderm likely was more chitinous and less phosphatic to facilitate bending and folding. This would explain why fossil periderms are rarely found with the aperture region preserved.

Conulariids spent the first part of life with their apex of periderm attached to a solid object on the sea floor. Upon reaching adulthood, they detached themselves, secreted a rounded patch on the broken end and became free-swimming, presumably with the apex pointing up and tentacles spreading out from the aperture. Some scientists speculate that the periderm perhaps housed a small gas chamber for regulating buoyancy. As with all jellyfish, conulariids would have subdued prey by deploying stinging cells (nematocysts) that occur in great number on the tentacles of jellyfish.

(Above) Pictured is a periderm of conulariid jellyfish *Conularia missouriensis* from 330-million-year-old Carboniferous Mississippian St. Louis Limestone in St. Louis, Missouri. This specimen is 4 inches long. The apical portion is missing. It was found by the Missouri Geological Survey in the 1850s and named by G.C. Swallow, Missouri's first state geologist. See this specimen on display in the Ed Clark Museum of Geology, Missouri Geological Survey, 111 Fairgrounds Road in Rolla. Learn more about the museum at [dnr.mo.gov/geology/edclarkmuseum.htm](http://dnr.mo.gov/geology/edclarkmuseum.htm).

MoDNR PHOTO BY BEN NICKELSON



## Drought (it's complicated)

In the Midwest, drought is a term we often hear, but it is difficult to define and monitor. The phenomenon operates on many different time scales and can impact many sectors of the economy. For this reason, there are four basic definitions of drought used by the climatological community: meteorological drought, hydrological drought, agricultural drought and socioeconomic drought.

Meteorological drought happens when dry weather patterns dominate an area, and is a region-specific measurement of deficiencies in precipitation. In the Midwest, this measurement is based on rainfall patterns according to the season, whereas a humid mid-latitude climate like that of New Orleans may base the measurement on the number of days of precipitation that are less than an otherwise normal amount, based on historical records.

Hydrological drought associates shortfalls in precipitation with surface or subsurface water supply. This definition of drought is determined on a watershed or river basin scale and typically lags behind meteorological drought conditions because it can take time for precipitation deficiencies to show up in a hydrological system.

Agricultural drought combines the effects of meteorological drought and hydrological drought and applies them to agriculture. Since plant water demand depends on weather conditions, agricultural drought measurements take into account the variable susceptibility of crops during different stages of growth, from emergence to maturity.

Socioeconomic drought associates the supply and demand of goods with elements of meteorological, hydrological and agricultural drought. It occurs when the demand for economic goods exceeds the supply as a result of a weather-related scarcity in the water supply. An example would be the cost of hydroelectric power during a hydrological drought, where a lack of water flow at a dam could cause the price of electricity to increase, or raise the cost of irrigation in agricultural regions dependent on fee-based use.

Drought is a complicated phenomenon, and we can all do our part to help reduce its effect by conserving the water resources we have when they are plentiful. Our water resources are used for more than just drinking and cooking; they also to grow our food, move freight along rivers and generate electricity, among other things. Without adequate water resources, all facets of our quality of life would be greatly affected.

Sources:  
"Definition of Drought," NOAA, [www.ncds.noaa.gov/monitoring-references/dyk/drought-definition](http://www.ncds.noaa.gov/monitoring-references/dyk/drought-definition)

"Types of Drought," University of Nebraska, <http://drought.unl.edu/DroughtBasics/TypesofDrought.aspx>

MoDNR PHOTO BY BEN NICKELSON

## Erin Lepper

*Regional Office Coordinator,*  
Missouri Department of Natural Resources,  
Division of Environmental Quality



**Would you please introduce yourself, tell us how long you've been with the Department of Natural Resources and what your job title is?**

I'm Erin Lepper, I've been with the department going on 6 years and I started out with the Public Drinking Water Branch. I worked in the Water Resources Program for a while

and now I work for the division [Division of Environmental Quality] as the Regional Office Coordinator.

**What do you do on a daily basis for MoDNR?**

Each day, I kind of look at the task at hand, look at what's going on, see where coordination needs to happen between our regional offices and our program staff – just help facilitate that communication. I try to make sure all parties are on the same page and we're all moving in the same direction.

**What kind of projects do you work on?**

In general, project-wise, we do a lot on the operations side of things so we make sure that we have consistent standard operating procedures and pay attention to department policy. A lot of times other regions and programs will work together in making policy and determine how best the department is going to implement the regulations.

**What do you like most about your job and working for MoDNR as a whole?**

Currently my job is an adventure every day – we're always dealing with something different. I get a lot of exposure to different areas of the department so that keeps things interesting – it's always hopping! In particular, the department is really great to work for, in my opinion. I worked in private industry before I

**Environmental manager Keith Bertels works with Lepper on a division issue.**

MoDNR PHOTOS BY ANDREW RICHMOND



Watch Lepper's interview on YouTube.

came here and there's a flexibility here in what you do and how you do it. You try to produce the highest quality of product you can and you can really excel and learn a lot about a lot of different things. So just the diversity of the work and the variability is really fun.

**How does your job help enhance Missouri's natural resources?**

Well, everything we do in terms of the regional offices touches some regulated entity and it impacts them daily on how they're obtaining or maintaining [regulatory] compliance. We really work hard to try to help facilities and regulated entities get into compliance quickly and stay there. So, we do a lot of assistance, we do a lot of hand-holding and just a lot of education out there.

**What would you say to someone who was thinking about a career with MoDNR?**

I think the department is a really good place to work. It's a great place to have and start a family. It not only gives you some flexibility in being able to prioritize family whenever you need to, but also I think the department itself has kind of a family atmosphere. So, people that work here generally feel like they're part of a team – that's a really good environment to be in.

*Go to [dnr.mo.gov/hr](http://dnr.mo.gov/hr) and join a great team, start a great career and achieve a great purpose.*

# RESTORED HISTORIC TAVERN IS A NEW JEWEL IN STE. GENEVIEVE'S FRENCH COLONIAL HERITAGE CROWN



**W**ith its nearly 300 years of rich French colonial history, Ste. Genevieve might easily be considered a crown among the treasures of Missouri's long and rich cultural heritage. If so, a new jewel was added to Ste. Genevieve's crown this summer with the dedication of the recently renovated and restored Green Tree Tavern, an addition to the Felix Valle House State Historic Site.

**Built around 1790, the Green Tree Tavern is one of the oldest buildings still standing in Missouri and was recently added to the Felix Vallé House State Historic Site.**

MoDNR PHOTO BY DONNA RAUSCH

The Green Tree Tavern is thought to have been built around 1790,

making it one of the oldest buildings still standing in Missouri. The building has been both a home and an inn during its more than 200-year existence, prompting archaeologists to regularly explore the soil around the building for artifacts. It was acquired as an addition to the Felix Valle State Historic Site through a partnership between Missouri State Parks and "Les Amis," a St. Louis-based organization dedicated to preserving Missouri's distinct French colonial heritage.

That wealth of history is preserved today along Ste. Genevieve's quaint streets and charming homes. Its narrow streets, historic buildings and fenced gardens offer a glimpse of a time when Missouri was part of a vast colonial empire in North America held by France and Spain.

The town's National Historic Landmark District boasts dozens of 18th and early 19th century buildings tracing the community's remarkable history.

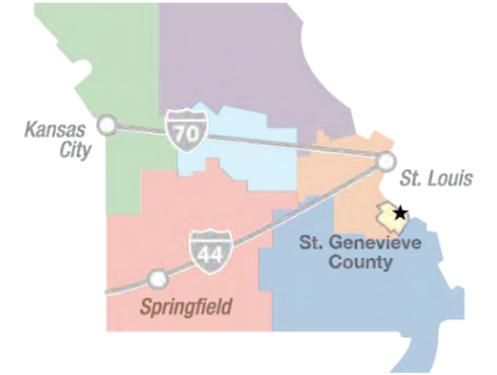
The Felix Vallé House State Historic Site features several buildings that preserve and interpret notable examples of the architecture and history for which the community is widely known. The Felix Vallé House, built in 1818, was designed as a combination mercantile store and residence for its original owner, Jacob Philipson. The home was sold to the prominent Vallé family of Ste. Genevieve in 1824 and served as a location for the trading firm of Menard & Vallé, as well as the residence of Felix and Odile Vallé.

Guided tours of the Felix Vallé House are available. The Bauvais-Amoureux House is open on a seasonal basis. An impressive diorama showing the village of Ste. Genevieve in 1832 is on exhibit in the Bauvais-Amoureux House. Additional exhibits on the architectural history of the community are also on display.



MODNR PHOTOS BY BEN NICKELSON

**(Top)** Felix Vallé House, the namesake of the historic site, was built in 1818, with native limestone in the Federal style.  
**(Above)** An interpreter discusses the mercantile side of the Felix Vallé House, which also served as a residence.



**(Above left)** Felix Vallé House State Historic Site annually hosts Le Revillon, a French Christmas celebration highlighting music, food, customs and decorations.  
**(Above)** Visitors to the home will experience the period of the 1830s, when the young Vallé and his wife were beginning to make their mark in the community.  
**(Left)** Interpretive tours are available 10 a.m. to 4 p.m., Monday through Saturday, and noon to 5 p.m. on Sundays.

# INDIAN POINT TRAIL

## AT POMME DE TERRE STATE PARK

Indian Point Trail meanders through open woodlands to a scenic overlook on Pomme de Terre Lake. The 2.75-mile trail's namesake pinnacle offers a breathtaking, panoramic view of the expansive 7,820-acre lake. Located on the Pittsburg (southern) side, the rustic trail passes through mature stands of oak and hickory and an occasional glade opening. Along the way, deer, wild turkey, summer tanagers, woodpeckers and numerous other animals and birds may be seen or heard. Hikers can see several species of wildflowers such as Missouri evening primrose, purple coneflowers and rose verbena plus native grasses such as big bluestem and Indian grass. Fall foliage brings more color and winter offers spectacular views after the trees have dropped their leaves.

The main loop is signed in a clockwise direction. Along the main trail are four benches located in areas where the hiker can stop, rest and take in scenic views of the lake. Caution should be used when crossing any park roads. By using white connector 2, a shorter hike of approximately 2.20 miles is possible.

On the Hermitage (north) side of the lake, another section of the state park includes the Cedar Bluff Trail, 1.5-miles long with similar opportunities to enjoy wildlife. Both the north and south parks have 128 campsites, a public beach, picnic sites and hiking trails.

For more information about Pomme de Terre State Park, visit [mostateparks.com](http://mostateparks.com).



(Far left) The trail's namesake, Indian Point, is a narrow rock bluff that juts out into Pomme de Terre Lake.  
MoDNR PHOTO BY BEN NICKELSON

(Left) Department photographer Ben Nickelson takes in the view of the lake from Indian Point.  
MoDNR FILE BY DAN WALSH

(Below left) During winter months when leaves are off the trees, views of the lake can be seen along most of the trail.  
MoDNR PHOTO BY BEN NICKELSON

(Bottom) Indian Point Trail is 2.75 miles long and takes about 2 hours and 10 minutes to hike.  
MoDNR PHOTO BY BEN NICKELSON



An infographic with a light blue background. It features icons for a lake, a shovel, a tree, and a bench. The text reads: "7,820 ACRE LAKE", "2.20 MILE SHORT HIKE", "2.75-MILE TRAIL", and "FOUR BENCHES".



but not least

E<sup>3</sup> Challenge winner number 2

# A New Tool for Tools



a trash can full of drill bits, hubcaps and more. Staff did not have room to work and couldn't quickly find needed tools. Over several months, the team worked to clean and reorganize the space. They found and repaired salvageable tools, disposed of broken equipment and outdated supplies, and organized and labeled equipment. The group created specific spots for tools in the tool boxes and on pegboards so they can find what they need and tell when something is missing. Tools also are color coded for the shop and each maintenance vehicle. Spending less time searching for tools and equipment has translated into more actual work time. They report less work tension and more productivity because they now know what tools they have, where they are located, and have a clean and well-organized work space to perform their jobs. They also estimate they have saved over \$1,400 by finding tools and supplies that might have been repurchased.

Congratulations to team members Gary Tucker, Terry Gerke and David Meeker!

*The Missouri Department of Natural Resources strongly encourages and supports staff participation in its LEAN program, dubbed "E<sup>3</sup>" for "Enhancing Effectiveness and Efficiency." E<sup>3</sup> is a continuous improvement program focused on making processes more effective and efficient while increasing customer service. Employees look at what they did yesterday and relentlessly work to do it more effectively and efficiently today.*

Coming soon in the Spring 2018 issue of Missouri Resources online –

(Top) Terry Gerke, Gary Tucker and David Meeker.  
(Below) Knob Noster State Park workshop before (left) and after (right).  
MoDNR PHOTOS

## “Now where did I put that?”

It's happened to all of us, and worse it always seems to happen when we are in the home stretch on some sort of project – just when we are really making some real progress. The Department of Natural Resources second E<sup>3</sup> Challenge winner took on this global workshop nightmare and raised their torque wrenches in victory. The Missouri State Parks' Knob Noster State Park Maintenance Team dubbed their endeavor the 5S project, whose purpose was to clean and organize the park's shop and work benches. The aptly named 5S is a process of sorting and removing unused items, organizing them, cleaning, and setting up processes to sustain the work.

The maintenance team inherited a shop that needed attention. The work benches were filled with tools, boxes,



## Tradition Awaits

The opening of the catch-and-keep trout fishing season on March 1 marks the beginning of the season that runs through Oct. 31. The season officially begins at 6:30 a.m. at Bennett Spring State Park near Lebanon, Montauk State Park near Salem, and Roaring River State Park near Cassville. Make your plans to cast winter aside and get hooked on spring at [mostateparks.com](http://mostateparks.com).



Missouri State Parks – a division of the Missouri Department of Natural Resources



[dnr.mo.gov](http://dnr.mo.gov)

