



DNR photo by Tom Uhlenbrock

Bridging Our History

Missouri's four historic covered bridges

by Tom Uhlenbrock

GOLDMAN, Mo. – Bring on the brides. The Sandy Creek Covered Bridge has been restored to its picturesque beauty and once again will be a highly sought after location for wedding photography.

The bridge spans lovely Sandy Creek in northeast Jefferson County at the southern tip of the St. Louis metropolitan area. It was built in 1884 by John Hathaway Morse and carried traffic until 1984.

The Sandy Creek Covered Bridge State Historic Site preserves one of Missouri's four remaining historic covered bridges. From the 1820s to the turn of the century, there were some 30 covered bridges scattered across the state. They were replaced over the years by iron bridges that could handle the heavier traffic.

The four that remain are architectural artifacts from a period in American history when travel, and life, moved at a slow-er pace. Today, they stand like wood



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(Top) A work crew puts the finishing touches on the restoration of the Sandy Creek Covered Bridge State Historic Site.

(Above) An unusual feature of Union Covered Bridge is its horizontal siding, similar to that on a home exterior. Missouri's other three historic bridges have vertical planking, like a barn.

(Left) Locust Creek Covered Bridge used to take travelers over Locust Creek. The bridge was bypassed when the creek was channelized for agriculture.

(Bottom) The Burfordville Covered Bridge at Bollinger Mill State Historic Site was completed around 1868. It is the oldest of Missouri's remaining covered bridges.

nearby Pershing State Park, Locust Creek maintains its natural meanders and feeds a rare remnant of wet prairie.

The Burfordville Covered Bridge in Cape Girardeau County in southeast Missouri is the oldest of the four bridges. It is part of the Bollinger Mill State Historic Site. The bridge, which was completed in 1868, stands next to the stately four-story, brick-and-stone mill building on the Whitewater River in the little community of Burfordville.

The Burfordville Covered Bridge was once a money-maker. Tolls were charged to cross it, with a traveler on foot paying three cents. A horse, mule or ox was nine. A one-horse wagon was 37 cents. And crossing faster than a walk brought a fine of a dollar.

Consider taking a step back in time and visit Missouri's oldest covered bridges – preserved like historic wood sculptures. For more information, visit mostateparks.com.



Tom Uhlenbrock is a writer for Missouri State Parks, a division of the Missouri Department of Natural Resources.

DNR photo by Christie Pick



sculptures in quiet, serene settings for visitors on foot to admire the craftsmanship of their heavy wood-beam structure.

Last summer, the Missouri Department of Natural Resources completed a restoration program of the Sandy Creek bridge that cleaned its wood beams, replaced the white pine siding and gave the bridge a new coat of its original barn-red paint.

The Union Covered Bridge State Historic Site in Monroe County in northeast Missouri is unique among the state's covered bridges because it has a double Burr-arch truss of curving wood for structural strength. The siding also is horizontal, like many houses, while the others have vertical planking, like some barns.

The bridge was built in 1871, and had an extensive restoration in 1987. It carried vehicles on the Paris-to-Fayette road for 99 years.

The Locust Creek Covered Bridge State Historic Site, built in 1868 in Linn County, used to cross Locust Creek, before the creek was channelized for agriculture. A footbridge now goes over the creek, and a quarter-mile walk through the bottomland forest ends at the covered bridge, which sits high and dry in the woods. At

DNR photo by Tom Uhlenbrock



Hazardous Cleanup Site Information Now Online

Missourians now can get details on hazardous substance cleanup sites anywhere in Missouri – from across the state to across the street – thanks to a new, web-based, interactive map developed by the Missouri Department of Natural Resources.

“Missouri residents have a right to know what’s happening at cleanup sites in their communities,” said Department of Natural Resources Director Sara Parker Pauley. “This mapping system puts those important details right at their fingertips.”

The map, known as the Missouri Hazardous Substance Site Locator, allows users to search for information about cleanup sites within a specific community or area. This map includes site details such as contaminants, future property use restrictions and links to important documents. Download-

able data layers also are available. The map can be found online at dnr.mo.gov/molts/gov/.

Osage Beach Student Wins Slogan Contest

An Osage Beach student’s suggestion to “go with the flow” won top honors in the Missouri Department of Natural Resources’ Earth Day 2014 Slogan Contest.



Mallory Bartels, a fifth-grader at Camdenton R-3 Capstone Gifted Center, submitted the slogan, “Watersheds: Go with the flow, clean H₂O,” based on DNR’s 2014 Earth Day theme, “Watersheds.”

Bartels will be honored on stage at Earth Day 2014, which will be held Friday, April 25th, on the south lawn of the Capitol in Jefferson City.

She also will receive a \$50 gift card

donated by Central Bank of Jefferson City. DNR received nearly 250 entries.

Earth Day 2014 is the 20th annual Earth Day event sponsored by the Department of Natural Resources. Between 1,000 and 2,000 students are expected to attend the event, which will include educational activities, contests and stage shows. For more information visit the Earth Day website at dnr.mo.gov/earthday/.

Urban Hazards Mapping

The Missouri Geological Survey (MGS), a division of the Missouri Department of Natural Resources, recently completed mapping of the geologic limitations and environmental vulnerability of the Poplar Bluff area. The map, produced at a 1:250,000 scale, identifies areas as potentially suited, or not suited, for the development of short- or long-term debris storage or solid waste disposal.

Time Exposures

At the end of World War I, farming remained a labor-intensive process with many harvesting operations still carried out using horses. While not a new technological advancement, threshers made it easier to separate the grain and chaff and eliminated much of the tedious and time-consuming manual labor involved in the harvest. Before threshing machines, grain was separated by hand using flails. Many farmers pooled resources by purchasing such machinery together and shared the equipment and labor involved in its operation.

This photo of a threshing machine and crew was taken between 1915 and 1920 on rented farmland south of Canton. The young man driving the wagon is Stanley B. Hoffman. Stanley’s father, George Hoffman, a German immigrant, is standing to his immediate left. The thresher was owned by a group of farmers who moved it from farm to farm and shared the work of each harvest.

George Hoffman’s family still lives in Canton on Century Farm, which was established in 1909.

Send your photo to “Time Exposures,” c/o Missouri Resources, PO Box 176, Jefferson City, MO 65102-0176. Original photos will be returned via insured mail. Pre-1980 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that might be of interest to our readers.

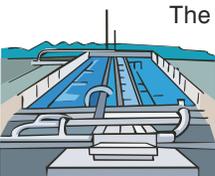


Photo courtesy of Hoffman family

Funded by the State Emergency Management Agency, this map gives local community planners and early responders the simple tools to make informed and timely decisions in the face of geologic hazards or other natural disasters, such as an earthquake or tornado, by identifying the geological suitability for development of short-term debris storage or long-term solid waste disposal.

Geologic limitations and environmental vulnerability were assessed by determining locations of faulting, shallow groundwater, groundwater aquifers, alluvial sediments, karst, solution-weathered bedrock and losing streams. MGS also developed a detailed GIS geodatabase for these geologic features in the Poplar Bluff area. During 2014, MGS is continuing this effort in the Farmington and Cape Girardeau areas. Maps are available at missourigeologystore.com.

Funding for Wastewater Engineering Assistance



The Missouri Department of Natural Resources is now accepting applications from communities with

planning or design assistance needs for wastewater treatment and collection facilities.

The department's Small Community Engineering Assistance Grant Program is offering the grants to communities serving populations of less than 10,000. The goal of the program is to help small communities obtain wastewater engineering services necessary to plan and design wastewater treatment and collection facilities.

Funding from the Small Community Engineering Assistance Grant Program may be used to cover the costs of engineering services, environmental investigations or services incurred in preparation of a facility plan. Applications are prioritized based on when they are received, as well as on the project's environmental impact.

Eligible communities may be se-

Stream Team Notes

25 Days of Stream Team



McDonald County High School, Stream Team #1351

So, what can citizens who are passionate about Missouri's streams accomplish in 25 years? How about stenciling more than 17,000 storm drains, conducting over 25,000 water quality monitoring trips, planting over 250,000 trees, or picking up more than 20 million pounds of trash? That is exactly what the volunteer members of Missouri Stream Team have accomplished since the program's inception in 1989. We think that's worth a celebration!

Join us for "25 Days of Stream Team" with more than 25 special events happening all over the Show-Me State from March through October. We'll be highlighting the people and activities that have made Missouri Stream Team such a success over the past 25 years and give all Missourians the chance to participate in celebrating this unique Missouri treasure. Check out the "25 Days of Stream Team" calendar on the Stream Team website at mostreamteam.org/ and join in the fun. We'll see you on the river!

Missouri Stream Team is sponsored by the Missouri departments of Natural Resources and Conservation, and the Conservation Federation of Missouri.



lected to receive up to \$50,000. Applications will be accepted at any time, or until funds are depleted. Additional information is available from the department's Water Protection Program at dnr.mo.gov/env/wpp/.

330 Acres Acquired Near Current River State Park

In November 2013, Missouri State Parks announced that the state has acquired 330 acres of property in Shannon County. The property, historically referred to as Camp Zoe, is located adjacent to Current River State Park and downstream from Montauk State Park. It also abuts the 64,000-acre Roger Pryor Pioneer Backcountry, which is managed by Missouri State Parks.

"This Ozark gem showcases beautiful natural resources, including Sink-

ing Creek near its confluence with the Current River," said Bill Bryan, director of Missouri State Parks. "Its location near Current River State Park and minutes away from the beloved Montauk State Park will provide visitors great opportunities to enhance their Missouri State Parks experience in the Ozarks," Bryan added.

Plans for development of the property and future use are in the preliminary stages.

For news releases on the Web, visit dnr.mo.gov/newsrel.

For a complete listing of the department's upcoming meetings, hearings and events, visit the department's online calendar at dnr.mo.gov/calendar/search.do.

Looking for a job in natural resources? Go to dnr.mo.gov/hr.

Top Spots ... to Spend the Night



**MISSOURI
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A



B



C



D



E

Missouri State Parks offers 40 campgrounds, and many parks have traditional cabins, but there is an additional experience available for park visitors to enjoy alternative lodging that is economical and comfortable.

Camper cabins, which are a compromise between a housekeeping cabin and camping, are available at four state parks. Johnson’s Shut-Ins and Mark Twain state parks have six camper cabins, Stockton State Park has five and Lake Wappapello State Park has four. Lake of the Ozarks State Park also has eight Outpost Cabins, which are similar.

The camper cabins have electricity, heating and air conditioning, but do not include water or restrooms. A central shower house and restrooms are a short walk away.

Lake of the Ozarks and Pomme de Terre state parks both offer yurts for rent. Yurts are a cross between a tent and a traditional cabin or RV camper. A durable fabric is stretched over a wood frame that includes a lattice wall and rafters that resemble spokes. The structure has a wood floor and is fastened to a railed deck that sits on top of concrete footings.

The yurt has a front door that locks, and three mesh screened windows that can seal shut with clear vinyl framed in Velcro. The yurt has electricity, air conditioning and heat, a small refrigerator and a microwave. The furnishings include a log futon, futon bunk bed and coffee table. A concrete pad out front has parking space, a picnic table, pedestal grill, fire ring and lantern post. There is no running water, and guests bring their own linens and coffee maker.

Reservations for camping, camper cabins or yurts at state parks can be made online at mostateparks.com, or by calling 877-ICampMo (877-422-6766).

A. Johnson’s Shut-Ins State Park offers six camper cabins that feature exterior amenities such as a campfire grill, providing the opportunity to enjoy s’mores right at your doorstep. DNR photo by Scott Myers.

B-C. Six camper cabins at Mark Twain State Park are located in the park’s Puma Campground. The wooded setting and lake views provide the perfect getaway for a quiet weekend or a week-long vacation. DNR photos by Scott Myers.

D. Pomme de Terre State Park is the latest to offer yurts as an alternative camping experience. DNR photo by Tom Uhlenbrock.

E. Yurts are circular structures with fabric covers, much like a tent. The wooden frame makes it strong and weather-tight.

DNR photo by Scott Myers.



Paddlers along the Stockton State Park Water Trail enjoy a day exploring the shoreline of Stockton Lake. The 6.65-mile trail offers views of limestone bluffs and wildlife such as beavers and bald eagles.

STOCKTON STATE PARK WATER TRAIL

photographs by Scott Myers

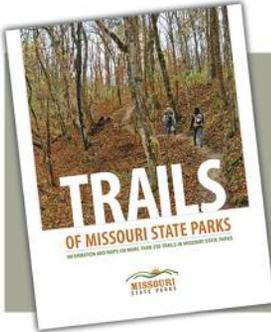
Hikers, bicyclists and other trail users typically think of trails being on land, but Stockton State Park’s newest trail provides the opportunity to experience the park on the water.

The water trail follows the shoreline of Stockton State Park and provides an opportunity to enjoy the park and Stockton Lake from a canoe or kayak. Along the 6.65-mile trail, paddlers

will see limestone bluffs cut by the Little Sac and Big Sac rivers and wildlife such as bald eagles and beavers. While on the trail, fishermen may be tempted by largemouth, spotted and smallmouth bass, crappie, walleye, catfish and bluegill. Green fish habitat signs indicate underwater fish structures for great fishing opportunities. The trail provides access to quiet coves for lunch and an island for exploring.

The two trailheads are only a little more than a mile apart by road and bicycle racks are located at each trailhead for easy bicycle shuttling. Kayaks are available for rent at Stockton State Park Marina.

Stockton State Park Water Trail is one of three in Missouri State Parks. Paddlers also can enjoy a water adventure at Finger Lakes and Lake of the Ozarks state parks. 



For more information on trails in Missouri’s state parks and historic sites, get your copy of *Trails of Missouri State Parks*. The 422-page, spiral-bound book is a comprehensive guide to more than 230 trails with detailed information for each trail including descriptions, maps and GPS coordinates.



Rock Matters



Chert

Chert is sedimentary rock composed of silicon dioxide (SiO₂). It is a granular microcrystalline form of quartz that is harder than glass, brittle, and breaks with a smooth, rounded or clam-like (conchoidal) fracture with sharp edges.

(Left) Rounded balls of chert are often referred to as cannonball chert. Cannonball chert forms inside of soft sedimentary rocks which later weather away.

(Bottom) Chert is a good material for arrowheads and other pointed tools, like this arrowhead knapped by MGS geologist Pat Mulvany Ph.D. Chert forms a sharp edge when chipped.

DNR photos by Hylan Beydler.

Chert colors may range from buff, green, gray or blue to red, pink, yellow, brown or black. A banded mixture of several colors also is very common. Because it is highly resistant to weathering, chert is the chief constituent of natural stream gravels in Missouri. The loose rock fragments blanketing hillsides in many parts of the state, particularly in the Ozarks, are mostly made of chert.

Chert is a rock of many names and disguises. Few people other than geologists actually call it chert, which is generally applied to the stone when its color is white, tan or light gray. Red, brown, reddish-brown and yellowish-brown varieties are called jasper. Black and dark gray specimens are known as flint. Mottled and pink types are called Mozarkite, while some banded varieties have found a home in the agate family.

Staff geologists field numerous inquiries from citizens who believe they have found dinosaur or other bones, which in fact are chert specimens.

Gravel operations often excavate chert from Ozark streams and crush it for use as an aggregate in road construction. For Native Americans, it was the stone's hardness and the way it broke that made it invaluable.

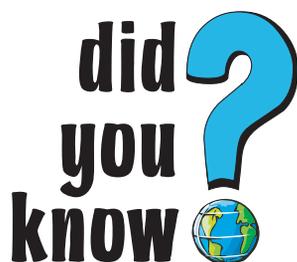


They used chert to make arrowheads and scraping and cutting tools because it breaks with a curved or shell-like fracture, leaving edges as sharp as broken glass. Artifact collectors generally call the stone flint.

Because chert is a very hard material that produces a spark when it is struck against steel, 17th-century-era long-barreled muskets used varieties of natural flint for their strikers. Modern-day Americans who make flaked stone tools like arrowheads and spear points are known as flint knappers.

The department's Missouri Geological Survey proudly displays an impressive collection of Native American stone artifacts at the survey's offices in Rolla. The more than 200-piece collection includes spear, dart and arrow points, knives, scrapers, drills and adzes. The artifacts are displayed in an archeological manner that chronicles man's dependence on industrial minerals. Industrial minerals are the nonmetallic, mined commodities that promote development and sustainment of civilization. This extraordinary collection was donated in 2002 by Estell Darwin Halmich of Bourbon, Mo.

Each year, hundreds of school children and adults are treated to this fascinating arrowhead display. In addition to this collection, numerous other instructive exhibits of rocks, minerals, fossils and maps are on display at the Edward L. Clark Museum of Geology, also in Rolla at 111 Fairgrounds Road. Learn more about chert at dnr.mo.gov/pubs/pub661.pdf.



Consumer Electronics Make Up 1 to 2 Percent of Municipal Solid Waste

Did you know that consumer electronics make up approximately 1 to 2 percent of the municipal solid waste stream? Televisions, video equipment, computers, audio equipment and mobile phones may not only contain components that are hazardous to the environment, but they often require scarce materials and large amounts of energy to produce. In 2009, 215 million units of computers, televisions and mobile devices were ready for end-of-life management. Of these, only 38 percent of com-

puters, 17 percent of televisions, and 11.7 percent of mobile phones were collected for recycling, according to a U.S. Environmental Protection Agency report. If just mobile phones were recycled, 35 thousand pounds of copper, 772 pounds of silver, 75 pounds of gold, and 33 pounds of palladium could be recovered for every million devices that passed through the recovery process. In addition, many electronics contain recoverable rare earth elements that are used for semiconductors and other components contained in the devices.



Recycling your electronics is not an impossible undertaking. Many electronics retailers have take-back programs for old items. In addition, many city, county and solid waste management districts host collection events for old devices, as well as events hosted by Missouri's e-cycle program. For more information on how and where to recycle your old electronics, visit the department's e-cycle website at dnr.mo.gov/ecyclemo.

... but not least

MissouriDNR40 Photo Contest

Celebrating 40 years
of taking care of
Missouri's natural resources

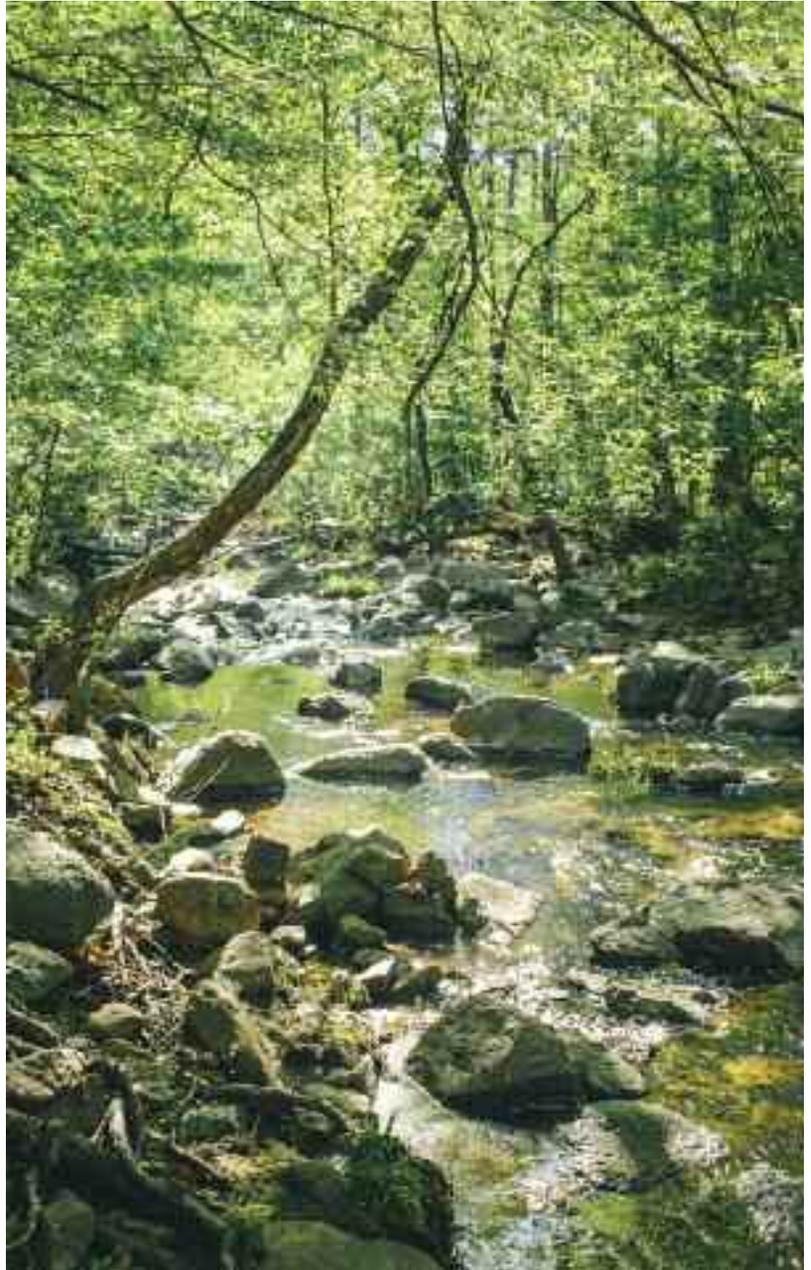
by Renee Bungart
photograph by Scott Myers

Attention all shutterbugs and nature lovers! We would love for you to help us, the Missouri Department of Natural Resources, celebrate our 40th anniversary by capturing and submitting your winning photograph of Missouri's outstanding natural resources. In honor of our 40th anniversary, the department is hosting the MissouriDNR40 Photo Contest from March 1 through Aug. 1, 2014.

Missourians value clean air, water, soils and a healthy outdoors in which to recreate. We've heard this many times from our Missouri Resources readers and visitors to our Missouri state parks. With your help, we have been taking care of and preserving Missouri's natural and cultural resources including our air, land and water for 40 years. The MissouriDNR40 Photo Contest will offer you the opportunity to capture your favorite moments in Missouri's rich natural and cultural resources and share them for all to enjoy. The photo contest is divided into three categories.

- **Natural Resources:** this category includes photographs of Missouri's air, landscapes and waterways.
- **Special Places:** this category will feature photographs taken within one of Missouri's 87 state parks and historic sites.
- **People and the environment:** this category includes photographs of people enjoying Missouri's natural and cultural resources.

The contest is open to all amateur photographers with no age restrictions. You may submit two photographs per category with a maximum of six total entries, but do not submit duplicate photos in multiple categories. All photographs must be taken in Missouri and documented with the photographers name, contact information, photo caption and address or location for each photo. Photos may be submitted online through the department's website at dnr.mo.gov/40/photocontest or sent by mail to MissouriDNR Photo Contest, PO Box 176, Jefferson City, MO 65102. If selected as a semifinalist, you will be requested to submit a high-resolution electronic file. Contest winners will have their winning photographs featured in the



Winter 2015 issue of *Missouri Resources* magazine, promoted on the department's website at dnr.mo.gov, displayed in the Lewis and Clark State Office Building, and showcased throughout the department. For a complete list of rules and entry form, visit dnr.mo.gov/40/photocontest.

So, grab your camera, capture the moment and submit your entries! Thank you for helping celebrate 40 years of taking care of Missouri's natural resources. Best of luck!

Renee Bungart is Deputy Director of Communications for the Missouri Department of Natural Resources.

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