It’s finally Spring, and time to get your clean-up on. From unwanted pesticides and household cleaners, to scrap tires and old 75-pound TVs – time to head ‘em up, and move ’em out!

Abandoned mine shafts clearly present a distinct hazard to us, but have created a unique haven for some of our fine feathered … er … bats. A cooperative effort has created a solution that protects us both.

Missouri State Parks: Where Cold Hands and Warm Hearts Meet

Hosting charity events for surrounding communities is nothing new in Missouri’s state parks and historic sites. But its long association with Special Olympics of Missouri is indeed, special.
It’s that time of year again. Days are getting longer. Temperatures are finally getting warmer, though you never know what you will get in Missouri! And the amount of household, automotive and gardening items you do not use anymore keeps getting bigger and bigger. Have no fear, the Missouri Department of Natural Resources has information to help you safely dispose of those unwanted items.

Let’s start in the garage – if there’s room. You might have scrap tires or leftover pesticides …

**Scrap Tire Options**
- Leave tires removed from your vehicle with the tire dealer/retailer for proper disposal.
- Take scrap tires to a tire dealer/retailer or permitted scrap tire processor for proper disposal.
- Cut the sidewalls out of each tire (leaving two sidewalls and tread ring) and dispose of the three pieces with your normal trash.
- Cut the tires circumferentially through the center of the tread (like a bagel) and dispose of the two pieces with your normal trash.
- Contact a permitted scrap tire hauler to remove and properly dispose of the tires.

**Contact the following for:**
- Scrap tire processors: dnr.mo.gov/env/swmp/tires/tireprocessors.htm
- Scrap tire haulers: dnr.mo.gov/env/swmp/tires/docs/wthaulerlist.pdf

**NOTE:** Scrap tires may not be burned or buried. Burning or burying scrap tires is a violation of the Missouri Solid Waste Management Law.

**Pesticides**
Each year, the department’s Pesticide Collection Program provides free collection events for farmers and households throughout Missouri to properly dispose of unwanted waste pesticides that include herbicides, rodenticides and fungicides.

**2018 Pesticide Collection Event Locations:**
- Bethany: March 24 at Orscheln’s, 3810 Miller St.
- Palmyra: May 19 at the Palmyra Recycling Center, 810 W. Line St.
- Perryville: June 23 at MFA Agri Services, 3501 U.S. Highway 61.
- Nevada: July 21 at the Vernon County Fairgrounds, 1488 E. Ashland St.
- Jefferson City: Sept. 8 at MFA Agri Services, 1009 Fourth St.

Portageville held the first collection event of the year on March 10.

For more information go to https://dnr.mo.gov/env/hwp/pesticide/

In the garage or in your house, you may find household hazardous waste you would like to get rid of, like paint thinner, motor oil, cleaning products, batteries, compact fluorescent light bulbs, CRT televisions and more. Many counties or cities have permanent household hazardous waste collection facilities. To find out more go to dnr.mo.gov/env/swmp/hhw/permanenthwfacilities.htm. The Missouri Materials Management Directory can help you find local contractors, vendors and drop-off locations for these items as well; visit recyclesearch.com/profile/mo-directory.

**Christmas Left-overs**
Around the holidays you might have received or purchased new electronics and then stored the old ones away somewhere so you didn’t have to see them or think about what to do with them. E-cycle Missouri can help!

Visit dnr.mo.gov/ecyclemo/where.htm to find locations and businesses to help you get rid of your unwanted electronics.

**Empty That Medicine Cabinet**
Finally, how many expired or no longer used over-the-counter medications or prescriptions are sitting in your medicine cabinet? Getting rid of these pharmaceuticals is an easy way to stop children or pets from being accidentally poisoned. It also prevents potential abusers from getting their hands on them.

First of all, do not flush medicines down the toilet. This potentially could poison the environment and wildlife. dnr.mo.gov/pubs/docs/pub2291.pdf has more information about the proper disposal of pharmaceuticals.

Find a Drug Take-Back Program. You can contact your local law enforcement or go to deadiversion.usdoj.gov/drug_disposal/takeback/. National Prescription Drug Take Back Day is April 28.

For other recycling information, please visit https://dnr.mo.gov/env/swmp/rrr/index.html or contact the department’s Solid Waste Management Program at 573-751-5401 or 800-361-4827.

Amy Poos is division information officer for the department’s Division of Environmental Quality.
Bandoned mine shafts are remnants of Missouri’s rich mining history, and can be found scattered throughout the landscape. Abandoned mines are a potential hazard to public safety. They also may provide refuge for endangered gray bat (Myotis griseescens) species.

Aggressive protection programs focus on permanently sealing mine shafts to safeguard the public. Consequently, bats may end up losing a resource critical to their survival. Installing bat-friendly gates, or cupolas, has proven to be an optimal solution for balancing human safety with wildlife conservation.

Cupolas are steel cages designed to prevent unrestricted human access to particular types of caves or shafts while allowing safe, unrestricted passage for bats and other critters into their desired subterranean habitat.

“Thanks to great federal and state environmental protection laws, the need to close abandoned mines for public safety does not trump the need to protect and preserve critical habitat for endangered species,” said Jim Cooley, project supervisor with Cave Research Foundation (CRF), a 60-year-old nonprofit organization dedicated to preserving cave resources.

Protecting People, Bats and Historic Mining Culture

by Christopher W. Bobryk

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For those caves or mines that are most important for bats ... gates provide a means to give the undisturbed quiet and protection that bats need. "During these times of stress and decline in Missouri’s bat populations from White Nose Syndrome, gates are one of the best means we have to help them survive the winters and protect cave resources and environments."

-Ken McCarty, Chief, Natural Resource Management Section, Missouri State Parks

The Department of Natural Resources Abandoned Mine Land (AML) unit partnered with CRF and Missouri Department of Conservation (MDC) to install four cupolas in Valles Mines (one of the earliest mining settlements in the “Lead Belt” of southeast Missouri). This was the final phase of a 2-year project where nine dangerous mine shafts had already been permanently sealed.

“The Valles Mines cave-gating project was a collaborative effort between numerous participants to eliminate dangerous shafts and protect valuable bat habitat on private land. I was very pleased to contribute,” said Vic Rackers, PE, AML lead project engineer.

Bat surveys were performed by MDC. The steel cupolas were constructed and installed by CRF, with help from AmeriCorps volunteers. The final phase of the Valles Mines reclamation project commenced in May 2017 and the department concluded the project in November 2017 for a total of $53,192.

“Installing bat-friendly gates is a great solution that protects bats, keeps the public safe, and preserves our mining history,” said Steve Frazier, curator of the Lost History Museum of Valles Mines and the landowner’s representative.

Learn more about abandoned mine lands online at dnr.mo.gov/geology/lrp/reclamation/aml/amlinfo.htm.

Christopher W. Bobryk is an environmental specialist with the Missouri Geological Survey, a division of the Missouri Department of Natural Resources.

(Top) Dave Dowdy, Brian Hicks, Brandon Schneider, Greg Snellen and Daniel Wedemeyer monitor the video feed from a downhole camera while inspecting mine shafts in Valles Mines, Jefferson County, in July 2014.

(Bottom) The downhole camera allowed inspectors to measure the depth of the mine shafts as well as check for the presence of bats before the Missouri Department of Conservation conducted a bat survey in the area.
Helping people make lifelong memories is what Missouri’s state parks and historic sites are all about. But, did you know they do much more than provide awesome places for people to have fun exploring nature and learning about our state’s rich heritage? For instance, our state parks work year round to engage with and support their nearby communities by doing things like hosting special charity events.

Take, for example, the three parks that host annual Polar Plunge events to raise money for Special Olympics of Missouri. Each February, Trail of Tears, Thousand Hills, and Lake of the Ozarks state parks host hundreds of locals who throw caution to the wind and plunge into frigid park lakes or outdoor swimming pools to raise money for area Special Olympics programs.

Missouri Department of Natural Resources
Director Carol S. Comer sprints out of the water at Lake of the Ozarks State Park after participating in the Polar Bear Plunge with a group of Missouri State Parks employees. MoDNR PHOTO BY BEN NICKELSON

Missouri State Parks: WHERE COLD HANDS AND WARM HEARTS MEET
by Brian Quinn

State park rangers assist a plunge participant into the frigid water at Lake of the Ozarks State Park in Camden and Miller counties. MoDNR PHOTO BY BEN NICKELSON

Plunge participants rush into the icy waters of Forest Lake at Thousand Hills State Park in Adair County. MODNR PHOTO BY EMILY BURKE

Polar Bear Plungers at Lake of the Ozarks State Park pose for the judges of the costume contest. MODNR PHOTO BY BEN NICKELSON

Polar Plungers, like this group at Trail of Tears State Park in Cape Girardeau County, took a cold water dip to raise funds for Special Olympics of Missouri. LAURA SIMON PHOTOGRAPHY PHOTO

(Above) Polar Plungers, like this group at Trail of Tears State Park in Cape Girardeau County, took a cold water dip to raise funds for Special Olympics of Missouri. LAURA SIMON PHOTOGRAPHY PHOTO

(Below) Polar Bear Plungers at Lake of the Ozarks State Park pose for the judges of the costume contest. MODNR PHOTO BY BEN NICKELSON
Marking its 12th year, the Trail of Tears State Park Polar Plunge event has raised more than $28,800 so far this year. In addition to its partnership with the area Special Olympics office, the park works closely with Cape Girardeau Parks and Recreation, Cape Girardeau Police Department and other local businesses and organizations that support the effort. Area high schools and student organizations at Southeast Missouri State University are always willing to recruit more volunteer plungers.

“I was introduced to Special Olympics when I was a recreation student at SMSU and volunteered at some of the sporting events. I’ve served on our local Polar Plunge committee for the past 11 years and plunged myself in 2009, raising $650.00! I have always admired how Special Olympians try their hardest, support each other and smile all the time. It’s a wonderful charity to support and I’m glad the Department of Natural Resources backs the Polar Plunge fundraising efforts.”

-DENISE DOWLING, NATURAL RESOURCE MANAGER, TRAIL OF TEARS STATE PARK

2018 was also the 12th year for the Polar Plunge at Thousand Hills State Park. Since it began, the event has raised more than $276,500 for Special Olympics Missouri’s North Area. Held in the northern-most state park host location, the Thousand Hills event usually presents the most extreme conditions. This year, 62 plungers braved a minus 3-degree wind chill and three inches of lake ice to raise more than $13,300.

A Polar Bear Plunge event has been held at Lake of the Ozarks State Park annually since 1996. In that time, more than $2.7 million has been raised for Special Olympics Missouri’s Central Area. This year, 275 plungers braved the cold to add an estimated $157,000 to the total. Other fundraising activities have been added to get more plungers involved. A popular new event feature, “Super Plungers” who plunge 24 times in 24 hours. A “Pee Wee Plunge” was added for kids nine and under. But instead of enduring icy lake water, the kids plunge into a portable pool of warmer water provided by the local fire department.

Brian Quinn is division information officer for Missouri State Parks, a division of the Department of Natural Resources.
Blastoids are an extinct group of stemmed echinoderm invertebrates that lived in the marine environment during the Paleozoic Era from early Silurian time to late Permian time, about 440 million years ago.

Blastoids are closely related to another group of similar-looking stemmed echinoderms called crinoids. Blastoids differ from crinoids in having a more highly developed five-sided (pentamorous) symmetry and specialized anatomical features that are lacking in crinoids. Also, blastoids tended to be smaller in size and shorter stemmed. The blastoid body, like that of a crinoid, consisted of four main divisions: a nut-like, five-sided calyx that housed vital organs; branching arms that radiate from the calyx that were used for gathering food; a short column (stem or stalk) that extended down from the bottom of the calyx; and rootlets that branched out from the bottom of the column that were used to anchor the animal to the seafloor. Each body division was composed of numerous, hard, calcareous pieces (ossicles) that were held together by ligaments and connective tissue. These formed a skeletal framework that was supportive, protective and flexible enough to afford some degree of body movement.

After the animal died, the arms, stems and rootlets readily fell apart and scattered across the sea floor. Their calyces, however, were more resistant and tended to remain intact long enough to become fossilized. Most of what is known about blastoids is based on their fossilized calyces. Fossil specimens with their stems attached are rare. The typical calyx seldom exceeds one inch in diameter, though the calyces of one species that lived during the late Mississippian time is about 2 inches in diameter.

Next to nothing is known about the larval and early growth time is about 2 inches in diameter.

Blastoids have a tendency to become obese. “Old-age blastoids have a tendency to become obese.”

Being a filter feeder, blastoids were known to inhabit marine environments that had some degree of water agitation. Fossil blastoids typically are found in association with rugose corals, fenestrate bryozoans, brachiopods and crinoids. The shell-crusher sharks of the Paleozoic Era likely grazed on blastoid and crinoid calyces.

It’s difficult to do much about a flood when it is happening, but after the floodwaters recede, the cleanup effort takes over as those affected try to pick up the pieces. During and after a flood, there are hazards that everyone should keep in mind in an effort to stay safe.

In general, it’s a good idea to minimize direct contact with floodwaters. Water from flooding frequently is contaminated with sewage, animal waste and other harmful substances, so it’s best to avoid swimming, wading, tubing or other recreational contact as this could be hazardous to your health. Recreational boating when rivers are in flood stage also is risky because rapidly flowing floodwaters can contain unpredictable currents, eddies, and submerged debris.

If contact with floodwater is unavoidable, make sure to bathe or shower with antibacterial soap afterwards. If you are injured while working in these conditions, contact your doctor to determine if you need a tetanus shot. If electric, gas, drinking water or wastewater systems are not working due to flood conditions, vacate the premises. As floodwaters ease, it is important to clean flooded buildings with fresh water and a biodegradable detergent. Inspect and clean all natural gas, electric, drinking water and sewage disposal systems before returning the dwelling to service. Water trapped behind levees or pooled in low areas may be released or pumped back into the adjacent river or stream without special permission or permits. Be courteous and avoid damaging neighbors’ property. If you see floodwater that might be contaminated with petroleum products or other chemicals, contact your local emergency response agency or the nearest MoDNR regional office. Dealing with a flood is not easy for anyone involved. Reducing the risk of coming in contact with contaminated surface water ensures the continued safety of those affected so that a quick and efficient cleanup can take place. For more information about Natural Disaster Resources, visit dnr.mo.gov/disaster.htm.
Please introduce yourself and tell us how long you’ve been with MoDNR.
My name is Antwane President, I’ve been with the Department for eight years this June.

What are your job duties?
My job duties include communicating with the motoring public on issues that they may have regarding vehicle emissions. For example, if they failed the emissions inspection and can’t really afford to make the necessary repairs, our office is the last line of defense for these customers getting their vehicles registered. We also perform audits, investigate emissions repairs and act as a liaison between motorists and inspection stations.

What are some daily issues you encounter?
Some of the things I encounter every day are assisting motorists with compliance waivers. We provide cost-based waivers, estimate-based waivers and other exemptions. We also assist inspection stations in the research of repairs, equipment failures and things like that. We do covert audits, where we go undercover at stations and try to detect fraud. Our office also goes in and educates the stations on the laws that the Air Pollution Control Program enforces. We do data audits where we look at the VINs (vehicle identification numbers) and search for discrepancies that a shop may encounter. Then we go to those shops and try to educate them on how to improve their services. We also have phone days where we talk to the motorists on the phone about different repairs … situations, and try to resolve their failed emissions test.

What do you enjoy most about working for MoDNR?
There are a number of things I like about the job. I like the freedom to be able to create my own schedule as far as what you’re going to do that day and how much work you can do. I like interacting with the public, solving issues for motorists when it comes to their vehicles. So at the end of the day you are gratified; you’ve solved the issue for someone – it makes them feel good, and you feel good.

How does your job enhance our natural resources?
If you look at St. Louis, it’s a non-attainment zone, which means this city has more vehicle emissions pollution than others cities in Missouri, so what we do is try to lower those emissions. So we help the air quality out substantially here in St. Louis. We make motorists around St. Louis aware of the emissions their vehicles create, and once the public understands that, they’re more likely to fix their vehicles.

What led you to MoDNR when you were job hunting?
I’ve always been an outdoors type. I kind of stumbled into the Department of Natural Resources accidentally because I wanted to work with wildlife, plus I like being outdoors, so the opportunity to be an environmental specialist kind of drew me in. My first job, working at the department’s state laboratory kind of opened my eyes to the different types of things that go on with the department; water, land – I wanted to be a part of that.

What would you tell someone who is considering a career at MoDNR?
I think it’s important for an individual who’s trying to pursue a career with us to know that these jobs exist for everyone. Don’t limit yourself. If you have a background in some type of science and you want to start somewhere as far as working in the environment, MoDNR’s definitely a place to start. We have great staff, we have knowledgeable people, we have experts in every field you can imagine. You will gain a wealth of knowledge about Missouri, the different natural resources that we protect, the different state parks, different job opportunities. It definitely fits an individual who’s looking to start a career in the environment.

Go to dnr.mo.gov/hr and join a great team, start a great career and achieve a great purpose.
Cave State Park. We took a wrong turn and got lost. From that point forward, I was determined to change their negative impression of hiking.

Thankfully, Missouri has such a wide variety of landscapes and historic sites. The turning point was going to Mastodon State Historic site where the boys were fascinated with the interpretive displays about Missouri’s ancient history and the extinct creatures that once roamed here.

Missouri State Parks also welcomes our canine friends. In August, we adopted a dog who has traipsed around parks with us; such a great experience for a dog who has endless energy.

My boys loved scampering around the canyons at Grand Gulf State Park. The Little Grand Canyon, as it is nicknamed, became my younger child’s favorite state park. It was unlike anything I had seen in any of the other parks. It was there I truly began to appreciate the vast diversity Missouri has to offer.

Every part of Missouri has something different. The southwest has the rolling prairies and bison (not buffalo, a difference I have learned in my travels) at Prairie State Park; whereas the Bootheel offers the tall, proud trees of Big Oak Tree State Park. In the far northeast corner of the state you can experience a walk in the past at the Illinwek Village State Historic Site which is much different than the mounds of the Mississippian people at Towosagy State Historic site in the Bootheel. There are plenty of lakes to fish, boat and swim. Missouri state parks and historic sites have something for everyone.

My goal has been accomplished. Although we fell just shy of all 88 stamps, my boys can’t wait until our next adventure. They’ve learned about history, science, nature and life. We will be able to share these memories of good quality family time forever. I wouldn’t trade that for anything.

Thank you Missouri State Parks for bringing my family closer together, for giving me memories I shall always cherish and adventures my boys and I will never forget.

Amy Poos is division information officer for the department’s Division of Environmental Quality.
Once inside the quiet shady sanctuary of Don Robinson State Park, it’s hard to believe that the bustling metropolitan area of St. Louis is just a few miles away. The park’s wooded hillsides buffer any outside noise and its interesting sandstone canyons make it easy to forget there is a modern world outside the park’s borders.

That’s just what Don Robinson intended when he purchased the property as his personal home and sanctuary. Robinson was a self-made St. Louis-area businessman who became successful by producing and marketing a cleaning product called “Off.” It was Robinson’s wish that upon his death, his property would become part of the Missouri state park system. Today, Don Robinson State Park offers visitors a chance to experience and explore this amazing landscape that is not far from St. Louis, but still feels like a world away.

The park is located in the upper watershed of the La-Barque Creek and features sandstone box canyons, shelter caves, cliffs, glades and upland and bottomland forests. It is considered among Missouri’s best places to conserve native wildlife and habitat. The park is rich in native flora with about 650 species of plants, natural features that attract numerous migratory songbirds and a high-quality stream that supports 42 species of fish.

Today, visitors can explore this amazing park through a network of trails, then relax with friends and family in the shady picnic area.
The Rock Island Spur of Katy Trail State Park is a multi-use trail that extends 47.5-miles through the heart of west-central Missouri and offers adventurers a slightly different combination of outdoor and learning experience.

The scenic Rock Island Spur takes bicyclists, hikers and equestrians through the area’s captivating blend of prairie-like landscapes, picturesque farm fields and dense woodlands. Trail users can also learn about Missouri’s rural history as they explore the small towns that sprung up and thrived along the railroad corridor. The trail is built on the former corridor of the Chicago, Rock Island and Pacific Railroad – traditionally called the Rock Island Line – which passes between Windsor and Pleasant Hill. Other trailheads are located at Lee-ton, Chilhowee and Medford.

During its heyday, the Rock Island Line lived up to its reputation made famous in the 1930s American folk song, The Rock Island Line is a mighty good road, The Rock Island Line is the road to ride.

The Rock Island Spur trail can be enjoyed on its own or as part of a much longer trail experience. At Windsor, the trail connects to the Katy Trail, which stretches 240 miles between Clinton and Machens. The Katy Trail is a designated section of the nationwide American Discovery Trail, a coast-to-coast, non-motorized recreation trail.

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(Above) The Rock Island Spur of Katy Trail State Park is a multi-use trail that extends 47.5-miles through the heart of west-central Missouri and offers adventurers a slightly different combination of outdoor and learning experience.

The scenic Rock Island Spur is shown looking down from a bridge on the Katy Trail.

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(Above) The Rock Island Spur provides Missourians with an additional 47.5 miles of trail to hike or bike. It connects with the 240-mile Katy Trail.

(Lef) Bicyclists observe the confluence of the Katy Trail and the Rock Island Spur at Windsor in Pettis County.

(Below left) The Rock Island Spur is shown looking down from a bridge on the Katy Trail.

MoDNR PHOTOS BY BEN NICKELSON

(Above) The Rock Island Spur offers a variety of scenic views including intersecting bridges, prairie-like landscapes, farmland, woodlands and rural towns.

(Lef) The Rock Island Line served as inspiration for a classic folk song that has been performed and recorded by countless musicians.

MoDNR PHOTOS BY BEN NICKELSON

Rock Island Line

47.5 miles

Hikers bicyclists equestrians

American Railroad Songs
In baseball, a tie goes to the runner – actually there is no such rule (it would be redundant to the actual rule). But in selecting the third Missouri Department of Natural Resources E3 team winners, MoDNR staff voted and two Missouri Geological Survey teams ended in a tie. Fair is fair, so two winners, two trophies. Congratulations to the Dam and Reservoir Safety Program and Well Installation Section!

**Dam and Reservoir Safety Program**

This program is tasked with performing permit renewal inspections on 697 state regulated dams. Each dam must be inspected by one of two inspection teams. The E3 team worked to improve efficiencies within the dam safety inspection process by consolidating dam inspections and renewal dates by team, for counties where fewer dams exist. Counties where owners have multiple dams now will be serviced by one team to reduce confusion and redundancy. The number of regulated dams will continue to grow and these consolidations will sustain inspections without having to increase staffing. It is estimated the effort will reduce overlapping county visits by 28.8 percent and travel time and costs by 11.3 percent.

This project was a follow-up action identified in the group’s 2015 E3 project where they successfully consolidated by watershed districts and realized positive results.

**Well Installation Section (WIS)**

Part of the Geological Survey Program, WIS receives an average of 10,000 well records per year. The goal of the team’s E3 project was to reduce the time spent from receipt of an incomplete well record to final certification.

In the past, records often had incomplete or inaccurate information that delayed the certification of the record. Eventually, letters requesting the information were mailed to contractors at least twice before the issue became a “case.” Cases are generated to track a wellhead record until resolution, potentially resulting in denial of a contractor’s permit at renewal time. Non-certification of a well record adversely affects both citizens and contractors. WIS implemented a trial version of the new process in 2015 and saw a significant decrease in mailed letters.

In 2017, the new E3 project began making an initial phone call to the drilling contractor first. Since the 2017 process went operational, a further reduction of the need to mail letters was confirmed. WIS also saved resources, staff time, and reduced the time required to certify the well record.

**Wellhead Protection Section E3 Team**

MaLinda Bassett, Eric Hohl and Karen Smith.

The Missouri Department of Natural strongly encourages and supports staff participation in its LEAN program, dubbed “E3” for “Enhancing Effectiveness and Efficiency.” E3 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.

See the Summer 2018 issue of Missouri Resources Online for the E3 Challenge winner number 4.