

MISSOURI. Conservationist

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[NOTE TO OUR READERS]

Continuing Our Legacy

The Fourth of July is one of my favorite holidays—and not just for the fireworks and family fun. Independence Day is a time to reflect on our country's founders and the freedoms for which

they fought. This month is also a fitting time to give thanks for the countless Missourians who have worked hard to conserve the rich outdoor resources we now enjoy.

It was 75 years ago this month that Missouri's "conservation legacy" began. Citizens came together, and through an initiative petition, formed an apolitical conservation agency guided by a management approach based on technical research rather than politics, led by four Missouri citizens, who made up the Conservation Commission. That citizen-led Commission continues to guide the Department's science-based conservation efforts today.

The challenges ahead for the young Department were daunting. Old black and white photographs from those early years seem to represent not just another time—but another place. The pictures show many of Missouri's forested hillsides cut over, streams choked with sediment from unchecked erosion, and a scarcity of both good habitat and wildlife.

Many old-timers can tell you about those earlier days, when depleted wildlife led to years, and in some cases decades, of closed hunting seasons—stories that seem almost unfathomable today. Thankfully, the Department along with generations of Missourians, helped turn that around.

I am proud to play a part in that "conservation legacy," and you should be, too. Over the past 75 years, Missouri has become a national leader in forest, fish and wildlife conservation. Missouri's unique partnership between the citizens of the state and the Department has led to many conservation successes. Our state now enjoys a vibrant and sustainable forestry industry, world-class sport fishing, and some of the best, most affordable and generous hunting seasons for small game, deer and turkey in



the country. As a result, conservation is a huge economic engine for the Show-Me State—supporting approximately 95,000 jobs and generating more than \$11 billion in economic activity.

Today, the Department continues to work with Missourians, and for Missourians, to protect and manage the forest, fish and wildlife resources of the state. The Department also provides opportunities for all citizens to use, enjoy and learn about these resources.

Integral to the state's conservation success are the tireless efforts of private landowners who improve habitat on their lands and waterways—hard work that ultimately benefits everyone through healthier wildlife populations and cleaner waters and fisheries. Read more about the state and federal agencies that support private landowner conservation efforts through cost-share and

technical assistance, starting on Page 10.

This month, I hope you will find your own unique way to share our conservation legacy with others, including your friends, family and especially today's youth. They are eager for opportunities to learn, explore and discover nature!

This summer, take time to experience Missouri's outdoors. Those opportunities may be the very ones that inspire and shape tomorrow's conservation leaders. You may think you're just fishing, wildlife watching, hunting, hiking, camping or paddling a canoe... but you might also be setting a hook that lasts a lifetime.

A handwritten signature in black ink that reads "Robert L. Ziehmer". The signature is written in a cursive style with a large, looping flourish at the end.

Robert L. Ziehmer, director



FEATURES

10 **Private Landowners: The Key to Conservation Success**

by Brett Dufur

MDC is celebrating the 75th anniversary of putting the state's citizen-led conservation efforts into action. In this issue, we highlight the important partnerships between MDC and private landowners to restore and conserve Missouri's lands and waters.

18 **Putting Down Roots**

by Brett Dufur

Pioneer Forest celebrates 50 years of sustainable forest management.

22 **In Pursuit of Jumpin' Jack Splash**

by Jim Low, photos by David Stonner

Frog legs rock!

Cover: A bullfrog rests in a pool at B.K. Leach CA in Elsberry, by Noppadol Paothong

📷 500mm lens + 2x teleconverter

• f/10 • 1/200 sec • ISO 200

Above: Brad Wright and his son, Sam, grab frogs at Eagle Bluffs CA late summer 2011, by David Stonner.

📷 EF24-70mm lens • f/2.8

1/15 sec • ISO 1600

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A GOOD STATE TO BE

I want to compliment you for such a beautiful publication. The pictures are vibrant and the articles are most interesting. When I was traveling on my job some years ago, Iowa was part of my sales territory, and I remember what a beautiful publication their commission published. I remember saying to myself, "Why can't Missouri do this?" Well now you do, and I would put the *Missouri Conservationist* up against any state's magazine. Thank you for making us proud; we really enjoy each issue.

Gene Fisher, O'Fallon

CONSERVATION CYCLING

I just received the June issue of *Missouri Conservationist* and read the *Conservation Cycling* article. My husband and I have biked from Clinton to St. Charles four times in the past several years. I agree completely with the author's description

of the trail, wildlife sighting, need for planning ahead for lodging and the all-round wonderful experience. However, the statement "trailhead with parking, water and restroom facilities" is incorrect. Although there is parking and restrooms (sometimes smelly), there is NOT water available in most places.

Joyce Lehman, via Internet

FROM FACEBOOK

There was a post a few days ago about baiting deer. I took it as something had changed about the laws. Can you please tell me how to find the rules or explain?

Bj Sharp

MDC: Here is a link to the info you are looking for: mdc.mo.gov/node/17944. It is still illegal to hunt over bait in all of Missouri. Due to CWD being found in the area, it will now be illegal to place

grain or other food or minerals out for deer in Adair, Chariton, Linn, Macon, Randolph and Sullivan counties. The reason for the regulation change is that activities such as feeding and placement of minerals/salts that artificially concentrate deer greatly increase the likelihood of disease transmission from animal to animal or from soil to animal.

In response to a letter about injured turtles on Page 2 of the June *Conservationist*, and what to do with them, I thought that I would post this for Missouri residents. Lakeside Nature Center in Kansas City, Mo., rehabilitates many native Missouri animals, including turtles. The Missouri Department of Conservation contributed funds to help with the building construction, which we greatly appreciate as Missouri citizens.

On a side note, the center gets quite a few turtles that come in after being "house pets," which are often malnourished. These turtles are often picked up on the road while in transit. I am just a volunteer from the center, not an employee. This is how I know about turtles, and the turtle is our symbol at the center.

Mary Ann Sawyer

MDC: It's a great facility with great people who do great things to help Missouri wildlife and help Missourians discover and appreciate nature. Here is the website: lakesidenaturecenter.org.

My husband and son were fishing a farm pond yesterday and caught sun perch. When they were cleaning them they noticed they had eggs in them and the eggs were hard. Is this common? What causes it?

Krystle Leyva

MDC: Green eggs (immature) are hard. Ripe eggs (mature) are soft. The eggs will soften prior to fish spawning. Sunfish populations will spawn throughout the summer. The amount of daylight and temperature are important triggers for the first spawn.

CORRECTION

The phone number listed on Page 27 of our June issue [*To Sell or Not to Sell*], under "For More Information" is incorrect. The phone number for the Call Before You Cut Hotline is 877-564-7483.



Reader Photo

BIG PINEY RIVER

Molly Johnson of Independence took this picture of the Big Piney River "back home" near Simmons. "I grew up in south Missouri, less than a mile from the river," says Johnson. "We loved going to the river and would walk along picking wild berries or flowers along the way." Much of Johnson's family still lives in Simmons, so she makes several trips down there every year. "I keep a couple of acres next to my parents' place," says Johnson. "It is nice to know I have a piece of that wonderful place to return to or for my own kids to enjoy someday."



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Second Elk Contingent Settling Into Missouri

Missouri's elk herd doubled May 19 with the arrival of 22 mature cows, three 1-year-old cows, three 2-year-old bulls, six 1-year-old bulls and one newborn bull at Peck Ranch Conservation Area (CA). The new arrivals join 36 elk from last year's restoration effort.

Tests conducted earlier this month revealed that 19 of the newly arrived adult cows were pregnant. Most of the mature cows brought to Missouri from Kentucky last year will produce calves this year, and some of the 2-year-old cows from last year are likely to produce calves also. Most calves should be born by late June.

Ongoing habitat work on private and public land not only helps ensure that elk remain in and around the 221,000-acre restoration zone, it also benefits other wildlife, such as deer, turkey and quail.

The 12,000-acre central refuge area of Peck Ranch CA was closed to the public prior to the elk's arrival to minimize disturbance of cow-calf pairs as they settle into their new surroundings. The refuge will reopen later this summer. More information about elk restoration in Missouri is available at mdc.mo.gov/node/9182.

Cast Your Vote

Starting July 1, cast your vote in the 75th anniversary of conservation photo contest. From Feb. 1 through May 15, MDC received 12,923 entries from 1,886 different people. Photos were submitted into seven different categories. Those categories are:

1. Mammals
2. Plants
3. Reptiles and Amphibians
4. Insects and Spiders
5. Birds
6. Outdoor Recreation
7. Habitats and Landscapes

A panel of judges selected the best entry in each category. We are now asking Missourians to vote for which of these seven photos they consider "Best of Show."

Please go to mdc.mo.gov/node/16689, and chose your favorite photo. All seven winners will be displayed in the October *Conservationist*.

CWD-Containment Measures

Measures approved by the Conservation Commission should help contain chronic wasting disease (CWD) in north-central Missouri. Over the past two and a half years, the Missouri and U.S. departments of agriculture have detected 11 CWD-infected deer at private hunting preserves in Macon and Linn counties. In response to these discoveries, MDC conducted intensive sampling of free-ranging white-tailed deer in the surrounding area and found five deer that tested positive for the disease.

MDC is working to limit the disease to a CWD Containment Zone consisting of Adair, Chariton, Linn, Macon, Randolph and Sullivan counties. MDC and agriculture officials supervised the removal of deer from the affected hunting preserves. MDC will continue testing free-ranging deer from the CWD Containment Zone to determine how far the disease has spread and how prevalent it is within the containment zone.

At its May meeting, the Conservation Commission approved regulation changes aimed at limiting the spread of CWD in free-ranging deer. These include restricting the placement of grain, salt, minerals and other deer attractants in the CWD Containment Zone, effective Oct. 30. Such attractants bring deer together in artificially

high numbers, allowing CWD to spread more easily. The ban has exceptions for backyard feeding of birds and other wildlife within 100 feet of a residence or occupied building or if feed is placed in a way that prevents access by deer. The regulation also includes exceptions for normal agricultural, forest-management, crop and wildlife food production practices.

MDC urges hunters and landowners to remove existing attractants or make them inaccessible through removal, fencing or covering. Landowners and farmers are encouraged to make mineral blocks inaccessible to deer when not being used for livestock.

The Conservation Commission also approved rescinding the antler-point restrictions in containment-zone counties during the 2012–2013

hunting season. Antler-point restrictions, commonly called the “four-point rule,” are designed to protect yearling bucks, allowing them to mature before they are harvested. Yearling and mature bucks are more susceptible to CWD than female deer. Yearling bucks also are more likely to spread the disease, because they leave their birth areas, often traveling many miles.

To further reduce the chances of spreading CWD, MDC is asking hunters who shoot deer within the CWD Containment Zone not to take whole deer carcasses or certain parts of deer out of the zone. Hunters should make every attempt to avoid moving deer heads or backbones out of the CWD-Containment Zone. CWD prions are concentrated in brain and spinal tissues. Moving these items to other areas could spread the

disease by contaminating soil and water.

Boned-out meat, hides, capes and finished taxidermy mounts carry no threat of CWD contamination. Quarters or other portions of deer can safely be moved if they do not contain any part of the spine or head. Antlers, antlers with skull plates and skulls that have been cleaned of all muscle and brain tissue are safe to take out of the containment zone, too.

Even within the CWD Containment Zone, it is important to properly dispose of deer carcasses, including bones and trimmings, to minimize the risk of spreading CWD. Carcasses should be taken to approved landfills or buried deep enough to prevent scavengers from digging them up.

CWD is caused by abnormal proteins known as prions. It is not known to affect any animals



ASK THE OMBUDSMAN

Q: Will a skink with a blue tail poison my dog if she ate one? I found the still-moving tail but not the body of the skink. Can the skink still live if my dog didn't eat it?

A: Hatchlings and young adults of the five-lined skink can have bright blue tails. That species, as well as Missouri's other five species of skinks, have the ability to quickly break off their tails when grasped by a predator. The still-wiggling tail will often distract the predator and allow the skink to escape. The skink should live, and it is able to regenerate a new tail that is usually dull gray-brown. I do not have any information to indicate that Missouri's skinks are poisonous. They are eaten by a variety of birds, snakes and mammals, including wild and domesticated canines.

Q: We were in Forest Park recently and took a photo of a duck with a black body, black and white head, and red face and bill. What kind of bird is it?

A: That is a domesticated duck called a muscovy duck. Domesticated ducks are usually not included in

bird field guides, so it's not uncommon for them to confuse observers. The red facial skin on the male is a useful characteristic for identifying the muscovy duck. Native to Mexico, Central and South America, it is one of only a few duck species to have been domesticated. The colors are variable and there is often more white on the body and wings than on the bird in your photo.



Muscovy duck

Ombudsman Tim Smith will respond to your questions, suggestions or complaints concerning Department of Conservation programs. Write him at PO Box 180, Jefferson City, MO 65102-0180, call him at 573-522-4115, ext. 3848, or email him at Ombudsman@mdc.mo.gov.

(continued from Page 5)

except those in the deer family, including deer, elk and moose. The disease progresses slowly, but it is always fatal. It has the potential to seriously damage Missouri's world-class deer hunting and the economic benefits that go with it.

To learn more about Missouri's CWD management strategy and express your opinions on the subject, visit mdc.mo.gov/node/16478.

Four Fishing Records Fall

Four fishing records fell in a brief period this spring. David Warren of Sikeston hauled in an 11-pound, 4-ounce bowfin while bowfishing at Duck Creek Conservation Area March 23. Rachel Davis of Climax Springs hooked a 1-pound, 12-ounce goldeye with her brand-new Zebco 202 fishing outfit at Lake of the Ozarks April 14.

Dylan Gilmore of Perry set a trotline at Ka-Tonka Lake in Ralls County on April 27, using goldfish as bait. He hoped to catch some catfish. Instead, he got a 9-pound, 2-ounce largemouth bass. He kept the fish in an aerated live well until it could be weighed, then released it.

Nicholas J. Wray of Harrisonville caught a 5-pound, 6-ounce river carpsucker May 6 on a trotline set in the South Grand River. Wray also holds the pole-and-line record for a 2-pound, 3-ounce river carpsucker he caught in almost the same spot in 2008.

Twenty-six Missouri fishing records currently are open—meaning that no one has ever entered a fish for that species and category. These range from common fish, such as the white and hybrid striped bass, to uncommon ones, such as burbot and northern pike. Details of Missouri fishing records are available at mdc.mo.gov/node/2476.

First Conservation Commission Meeting Was 75 Years Ago This Month

July 2 is the 75th anniversary of the Missouri Conservation Commission's first meeting. The historic event was the culmination of tireless work by the Restoration and Conservation Federation of Missouri, the precursor of today's Conservation Federation of Missouri. The sportsmen who comprised the Federation were dismayed by the steep decline in forests, fish and wildlife. They proposed Constitutional Amendment No. 4, establishing the Conservation Commission. Seventy-one percent of voters approved the amendment in November 1936. It went into effect on July 1, 1937.

Gov. Lloyd C. Stark had the distinction of appointing the first four conservation commissioners. First, he met with prospective commissioners and sportsmen to discuss the agency's future. The careful thought that went into his appointments is reflected in the diversity of that first commission.

- E. Sydney Stephens was Harvard-educated and heir to a Columbia publishing firm. His interest in conservation sprang from a passionate interest in hunting waterfowl and upland birds. It was his idea to write conservation into the state constitution, ensuring that the separation of conservation from politics could not easily be undone. Stephens was not a wildlife-management professional. Yet, when he stepped down after 10 years as conservation commission chairman a veritable Who's Who of conservation luminaries from across the nation, including Aldo Leopold, attended a testimonial dinner in his honor.
- Wilbur Buford was chosen for the first conservation commission because he had led the Conservation Department's precursor, the Missouri Fish and Game Department. Including him on the first Conservation Commission ensured the loyalty of Fish and Game employees, all of whom were retained in the new agency. His experience provided continuity for the transition to a new system of conservation governance.
- Albert P. Greensfelder was a St. Louis businessman and member of the Missouri State Planning Commission. He had a deep interest in forest and stream conservation. Greensfelder was not a prominent sportsman, as were most of the others involved in Missouri's early conservation movement. The *St. Louis Post-Dispatch* noted that "the conservation amendment is designed to conserve and restore all forms of wildlife, not alone those types which interest sportsmen." He was the Commission's first vice-chairman.
- John F. Case was editor of *Missouri Ruralist* and an influential leader of the farming community. His involvement was considered key to the agency's success because most rural land was owned by farmers and conservation could not occur without their active involvement.

Supreme Court Judge George Robb Ellison swore in the four men in the governor's office on July 2, 1937. They held their first meeting immediately after taking their oaths. Seventy-five years of conservation history have confirmed the wisdom of Missouri voters in establishing a system of conservation governance that continues to be the touchstone for citizen-led, science-based conservation programs.

Spring Turkey Harvest Up

Hunters checked 40,447 turkeys during Missouri's regular spring turkey season. That is up 5.5 percent from 2011. This year's top harvest counties were Franklin with 852, Texas with 803 and Greene with 698. The youth-season harvest was 4,319, bringing the 2012 spring harvest total to 44,766. That is up about 6 percent from 2011, reflecting improved nesting success in 2011. Turkey harvest totals by county are available online at mdc.mo.gov/node/17396.



TURKEY AND MALLARDS: NOPPADOL PAOTHONG



DU is 75, too!

The formation of Missouri's conservation department was part of a national conservation awakening that also led to the formation of Ducks Unlimited. DU has been instrumental in establishing the annual census of wild duck populations, federal duck-stamp programs that raise money for waterfowl conservation, treaties that coordinate international waterfowl hunting regulations and management and protection of more than 15 million acres of wetland habitat. These and other achievements lend credence to DU's 75th anniversary theme, "Conservation for Generations." For more information about Ducks Unlimited, visit <http://bit.ly/KIVzBK>.

75th Anniversary Video on Sale

The Promise Continues: The Missouri Department of Conservation's 75th Anniversary premiered on television stations statewide in April. Now, a DVD combines the original program with bonus features. The 28-minute program features historic photos, film footage and audio files, along with the first film produced by MDC in 1940. Other vignettes focus on some of Missouri's memorable conservation pioneers. The DVD is available at MDC nature centers and regional offices for \$8 plus sales tax. You also can purchase copies through MDC's online Nature Shop (mdcnature-shop.com) or by calling 877-521-8632. Shipping and handling fees apply to phone and online purchases. The Nature Shop is one way MDC helps Missourians discover nature.

Apply for Managed Deer Hunts

Deer hunters have until Aug. 15 to apply online for most managed hunts. For more information,

Did You Know?

We help people discover nature.

Visit Us on YouTube

- » **YouTube** offers a great and easy way for MDC to share more than 270 videos. We hope these videos provide education and enjoyment and inspire you to go outside. From land management tips to bears to archival footage of Woody Bledsoe, "The Singing Forester," there's something for everyone to watch. Here are seven of the featured playlists you will find:
- » **75th Anniversary MDC Film Archives**—17 videos that take a look back at some of the motion pictures MDC produced through the years. Some of the titles include: *Back to Missouri* (1940), *A Way of Life* (1957) and *Our Wild Inheritance* (1976).
- » **Wildlife of Missouri**—37 videos aimed to help you discover some of the many wildlife species in Missouri. Titles include: *Alligator Snapping Turtle Bites Researcher*, *Baby Birds* and *Badger*.
- » **Bears**—Although black bears are native to Missouri, they were nearly wiped out during settlement. Now they're making a comeback. The seven videos on this playlist are aimed at teaching you more about this large mammal and the research MDC is conducting on them.
- » **Elk Restoration**—MDC is in the second year of a long-term effort to restore this native majestic animal to a specific area of southeastern Missouri. This playlist features 17 videos on elk restoration.
- » **Land & Water Care**—24 videos providing tips for managing land for wildlife. From edge feathering to prescribed burning to forest stand improvement, there's a wide range of videos to meet many landowner needs.
- » **Recipes**—This playlist provides ideas for how to cook up nature's bounty. A total of 44 videos with recipes for everything from blackberry pecan squares to spoonbill jambalya to squirrel parmesan and more.
- » **Wildlife Damage Control**—Six videos provide you with helpful tips for dealing with common nuisance wildlife.
- » **Visit youtube.com/user/moconservation** to browse all of the playlists above as well as Missouri birds, snakes and fishing.

visit mdc.mo.gov/node/3867. Hunters may apply individually or as a group of up to six, except for youth-only hunts. For these, youths may apply singly or with one other youth. Be sure to have the nine-digit Conservation ID number for each hunter. Contact your local MDC office if you don't have Internet access. All successful applicants will be mailed an area map and other information regarding their hunt. Resident or nonresident managed deer hunting permits are required. Permits will be available to successful applicants anywhere permits are sold.

Conservation History Exhibit

The Kirkpatrick State Information Center in Jefferson City is hosting an exhibit focusing on Missouri's conservation history. The exhibit consists of 36 large panels, including reproductions of murals from the state Capitol and MDC headquarters. They trace Missouri's conservation history from abundance through depletion and restoration. The exhibit will be on display in the lobby of the state archives building through Dec. 31. For more information, contact the Missouri Secretary of State's office.

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Crayfish Regulation Discussions Continue

The Department of Conservation continues to gather information to make an informed scientific decision on invasive crayfish. The Department has listened and consulted with bait producers and dealers on invasive crayfish. Education efforts have worked to inform anglers and bait sellers about how to prevent invasive crayfish from damaging the state's sport-fishing industry.

A proposed course of action would prohibit the importation, purchase or sale of live crayfish, commonly called crawdads, for use as fish bait. It would not prevent anglers from catching crayfish and using them as bait. This action is intended to prevent damage to stream and lake ecology, species losses and protect recreational and economic values associated with fishing. More than 1.1 million Missourians enjoy sport fishing, which generates more than \$2 billion in economic activity in the state annually.

Surveys conducted in 2010 and 2011 showed crayfish sales were minor for most Missouri bait shops, pet shops and aquaculture operations, typically representing only about 1 percent of their income. Nevertheless, Deputy Director Tom Draper, who chairs MDC's Regulations Committee, says the decision to consider banning commercial crayfish sales was not taken lightly.

"The Conservation Department is responsible to the citizens of Missouri for protecting fish and wildlife and the economic and recreational benefits that go with them," says Draper. "Other states already are seeing declines in the quality of fishing because of invasive crayfish. We don't want to get 20 or 30 years down the road and wish we had done something to protect our fishing when we had the chance. Knowing what we do, it would be irresponsible not to take some type of action to protect Missouri's aquatic resources."

MDC Resource Scientist Bob DiStefano says crayfish are unlike many invasive species, because they don't have to be far from their native areas to cause trouble. A crayfish species whose population is in balance with other species in its native waters can cause ecological problems when introduced to a neighboring watershed.

The red swamp crayfish is an invasive species.



"Many crayfish species can become invasive if moved into the wrong setting," says DiStefano. Imported crayfish also can carry diseases with the potential of decimating native crayfish populations. Crayfish are a staple food for black bass, sunfish and many other sport fish.

What MDC knows about invasive crayfish comes from dozens of studies in Missouri and other states. DiStefano says those studies show that the danger posed by commercial trade in crayfish is real and serious.

For example, spot checks conducted by MDC before passage of the crayfish sales ban showed that more than one-quarter of bait shops were selling crayfish species that already were illegal under previous regulations. In most cases, these were not willful violations. Bait shop owners simply did not know the difference between crayfish species including the invasive species. Even if dealers could tell the difference, they could not be expected to detect a few individuals of an invasive species mixed in with a shipment of thousands of less-destructive crayfish.

MDC inspections also found that many bait shops were selling crayfish obtained from outside

of Missouri and that some shops were illegally selling crayfish collected from the wild.

Invasive crayfish already are impacting Missouri waters. DiStefano said field studies have documented 25 instances of crayfish invasions in Missouri. Those invasions have caused declines of six native species.

DiStefano says invasive crayfish have been shown to out-compete native crayfish, compete with game fish for food, destroy aquatic plant beds used as spawning grounds and nurseries for game fish, and are known to also eat fish eggs. This combined with reduced spawning habitat and food means fewer and smaller fish. A study of lakes in Vilas County, Wisc., documented resource damage from invasions of rusty crayfish of more than \$1 million annually.

Draper noted that Missouri anglers would still be allowed to catch crayfish and use them for bait if the Department implemented a regulation. A ban would only prohibit commercial trade in live crayfish bait. Bait shops would still be permitted to sell dead or preserved crayfish for bait. He says delaying implementation of a ban would give MDC time to inform anglers

about the risks associated with moving crayfish from one place to another.

“The Department needs anglers’ help to protect Missouri’s lake and stream fishing,” says Draper. “It is critical for anglers to know the danger posed by moving crayfish and other bait from one place to another. How well we do our job of educating the public will make a huge difference for the future of fishing in Missouri.”

A recent survey of anglers showed that 40 percent of Missouri anglers release live bait into fishing waters. DiStefano urges anglers to use crayfish for bait only if they are caught in the same body of water where they will be used. He also asks anglers not to release commercially purchased live bait, including minnows and worms, at the end of a fishing trip. He says this has serious potential consequences, because both commercially sold live bait and bait caught by anglers often is transported across natural or state borders.

“The world is a lot smaller today than it was even a few decades ago,” says DiStefano. “In the past, we didn’t have to worry as much about introduction of exotic species, but those days are gone. We have to change our habits if we want to protect Missouri’s fisheries and other aquatic resources.”

Besides allowing anglers to use crayfish that they catch themselves, a crayfish ban would include two exceptions for commercial sales. One is for human consumption. The other is for crayfish used for scientific research or for food for confined animals held by authorized representatives of universities, colleges, schools, incorporated city, state or federal agencies, publicly-owned zoo or other qualified individuals. Anyone who imports, sells or buys crayfish under these exceptions must meet certain record-keeping requirements. Buying or selling live crayfish taken from waters of the state already was prohibited.

For more information about invasive crayfish, visit:

- » mdc.mo.gov/node/5826
- » news.opb.org/article/invasive-crayfish-may-be-class-pets-first/
- » news.wisc.edu/9996
- » malibu.patch.com/articles/invasion-of-the-crayfish-pest-threatens-wildlife-in-local-streams-bdcd674a
- » invasivespecies.wa.gov/documents/priorities/non-native_crayfish.pdf

A Historic Event, Almost 30 Years in the Making!

It takes nearly 25 years to turn a lake sturgeon egg into a spawning adult. For a fish that can live more than 100 years and weigh more than 200 pounds, 25 years is just a good start. But for a fisheries biologist, it’s a career.

I am the fourth person to serve as the Department’s lake sturgeon recovery team leader. Of the previous three, one has retired and another has passed away. But I know all of them would be smiling about an event that happened at the U.S. Geological Survey’s (USGS) lab in Columbia on April 4, 2012: We spawned lake sturgeon outside of the wild for the first time in Missouri!

The spawning event was only one portion of a cooperative project with the USGS lab. The lab needed lake sturgeon eggs and fry to study the effects of various environmental contaminants on egg and fry development and survival. Various amounts of these contaminants are currently found in our big rivers and several have been known to affect growth, survival and even the reproductive organs of fish.

In order to help fulfill the USGS’s need, Department biologists began sampling specifically for large lake sturgeon. Fish from 35 to almost 90 pounds were scanned with a sonogram machine and an endoscope to see if any were ripe males or females. Several fish were held over in large tanks for the project. They turned out to be some of the first fish stocked by the Department in the mid-1980s.

Lake sturgeon spawn in several bouts in the wild. As females ripen, multiple males begin striking the female, forcing the eggs out. At the same time, the males release milt, which contains sperm that fertilizes the eggs. The eggs stick to any object in the area and remain there until they hatch, about nine days later.

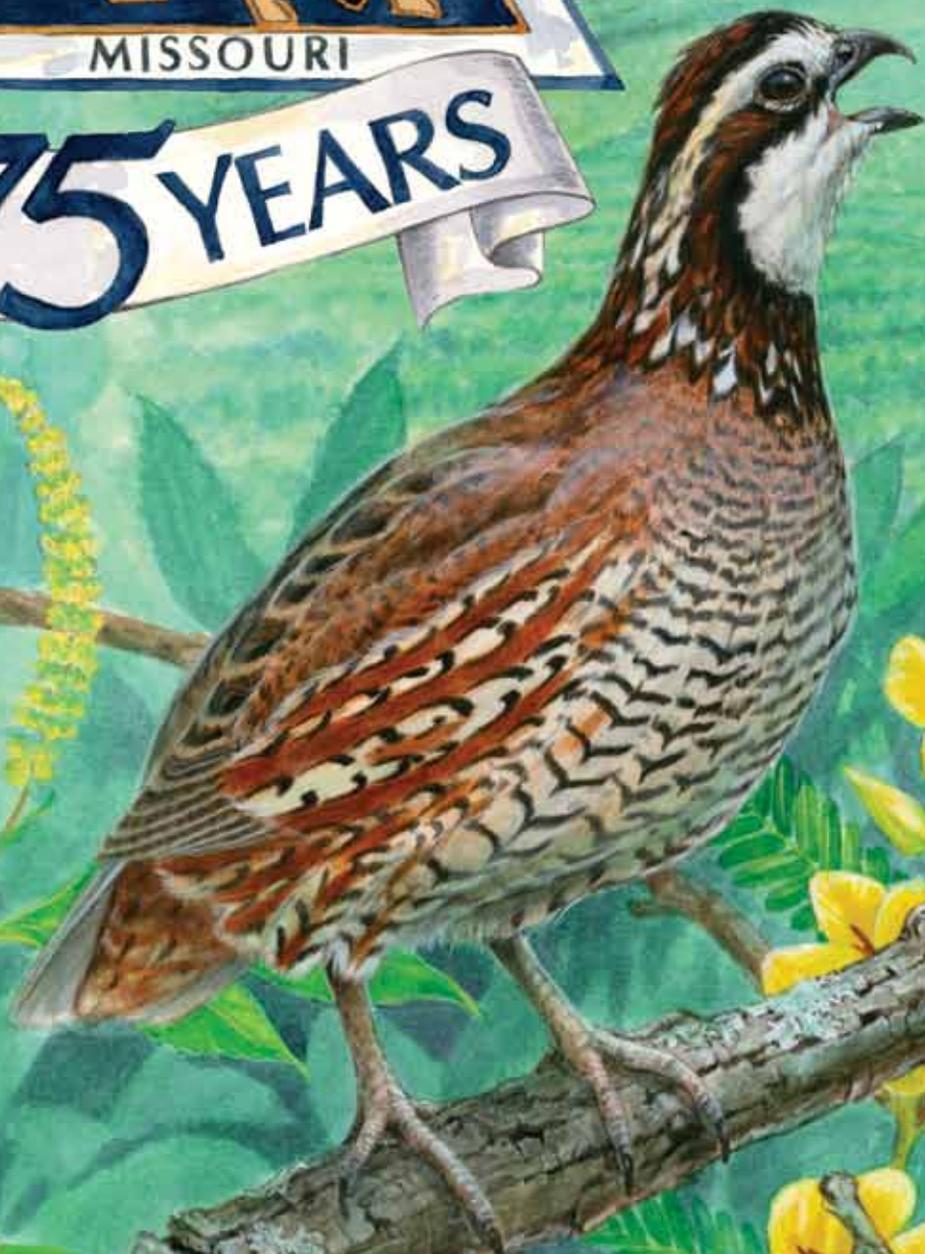
The initial harvest from the first fish yielded approximately 19,000 eggs. She released similar amounts several more times, releasing more than 225,000 eggs. As the first fish finished, a second one was ready and the crew harvested some of her eggs as well. The third and final fish was spawned a few days later. All fish were released back to the waters from which they were captured later that week.

While most of the eggs were used for the USGS project, some of them were sent to a Department facility, where biologists are examining the feeding habits of lake sturgeon fry.

This project provided a great opportunity for both Department and USGS staff to learn how to catch and spawn large adult lake sturgeon. The knowledge and experience gained through these efforts will be useful as we continue to recover Missouri’s largest and longest-lived fish species. — *by Travis Moore*



In April biologists spawned the first batch of lake sturgeon (19,000 eggs) outside of the wild in Missouri.



T

he success of conservation belongs in large part to the generations of hard-working Missourians who have improved their land to benefit the state's fish, forest and wildlife.

"Private landowners own 93 percent of the state's land and are the key to conservation success," says Bill White, MDC private land services division field chief. "Since the Department was created in 1937, the partnership between MDC and landowners has always been seen as the primary way to make conservation work. That partnership is stronger than ever."

MDC supports landowners' efforts to improve habitat through cost-share programs, initiatives and outreach efforts. These projects ultimately benefit all Missourians through healthy soils, waters and forests, as well as abundant fish and wildlife.

"Our natural resource recovery and conservation has evolved through a unique partnership including the collective wisdom of landowners, outdoor enthusiasts

and government agencies," says MDC Deputy Director Tom Draper. "It is my belief that our relationship with landowners is even more critical today than it has been in the past. Strengthening the partnership between farmers, sportsmen and conservation agencies has never been more important if we are not only going to sustain soil, water and natural resources, but ourselves, as well."

ADVANCING PRIVATE LANDOWNER CONSERVATION

MDC helps landowners improve habitat on their land through both technical assistance and cost-share programs. Last year, MDC provided service to more than 73,500 rural and urban landowners, including more than 5,500 on-site visits. Oftentimes, that conservation work occurs near public conservation areas.

"MDC manages approximately 995,000 acres of public land. Private land surrounding those areas plays an important role in expanding our management efforts," says Mike Schroer, MDC wildlife management chief. "MDC staff offers private land neighbors technical assistance, field days and workshops to help them better manage their lands."

MDC foresters assist landowners with forest management through one-on-one contacts and educational opportunities, offering technical advice and assistance on how to manage woodlands for wildlife and wood products.

Through the Forest Stewardship Program, created in the 1990 Farm Bill, MDC staff help landowners prepare management plans that consider all the natural resources on the landowner's property. Missouri presently has 312,000 acres of land under stewardship plans, with more than 19,000 acres added just last year.

"MDC foresters assist thousands of landowners that are working to improve thousands of acres," says Lisa Allen, Missouri state forester. "Site visits and referrals to consultants through the *Call Before You Cut* program are all a major part of our work facilitating more than 100 timber sales annually, totaling more than 5 million board feet—enough to build about 200 average-sized homes. Department-led landowner workshops and other education programs also contributed to more than half of the forest management plans written by Missouri forest owners last year."

MDC's George O. White Nursery fosters a growing forest resource by distributing about 3.5 million seed-



MDC helps landowners improve habitat on their land through both technical assistance and cost-share programs. Private Land Conservationist Jan Dellamano (right) speaks with landowner Ashley Williams about his quail habitat plan on his farm near Farmington.



lings each year. MDC provides forestry assistance on more than 42,200 acres of private land and to more than 100 municipalities.

MDC also works with landowners to maintain and improve sport fish populations, aquatic biodiversity and habitats. Last year, MDC provided stream and lake management assistance including pond evaluations, streambank stabilization and tree planting to more than 5,600 private landowners and distributed \$466,000 for stream protection and restoration work through the Stream Stewardship Trust Fund, made available by the Missouri Conservation Heritage Foundation.

“Missouri has tremendous aquatic resources and biodiversity, most of which is on private lands,” says Chris Vitello, MDC fisheries division chief. “To address this, the Department has selected 78 priority watersheds to focus its habitat and biodiversity efforts, selected for their conservation value, high likelihood of success, and the engagement of local stakeholders and partners.”

MDC partners with nongovernmental organizations such as Ducks Unlimited, Quail Unlimited, the National Wild Turkey Federation, Quail Forever and Pheasants Forever, and Quail and Upland Wildlife Federation, as

MDC works with landowners to maintain and improve sport fish populations, aquatic biodiversity and habitats. Last year, MDC provided stream and lake management assistance including pond evaluations, streambank stabilization and tree planting to more than 5,600 private landowners.

well as other groups, to develop cost-share and other initiatives through matching agreements.

MDC’s agriculture liaison works directly with agriculture groups and agencies to foster communication and cooperation in the understanding of fish, forest and wildlife issues as they relate to agriculture. “Communication is the key,” says Clint Dalbom, MDC agriculture liaison. “If we can understand each other, we can often work together.”

These efforts are important, since according to the 2007 Ag Census, 66 percent of Missouri was listed as “part of a farm,” including pasture, timber or cropland.

“Good conservation and agricultural practices go hand in hand,” said Missouri’s Director of Agriculture Jon Hagler. “We encourage farm families to take advan-

tage of the outstanding programs the Department has available. Native plants and species, for example, are beneficial to farming operations and play an important role in helping Missouri farmers continue to be the most productive in the world.”

WILDLIFE HABITAT, WATER QUALITY AND SOIL HEALTH

A number of agencies have joined forces to provide both technical and financial assistance to Missouri farmers and landowners. This partnership enhances and maintains wildlife habitat while simultaneously improving soil

The Wetlands Reserve Program helps to remove cropland from production that experiences repeated flooding, expensive crop damage and excessive soil erosion. The restored wetlands provide excellent fish nurseries when connected to the main channel, as well as wildlife habitat for ducks, geese, amphibians and shore birds.

and water quality. Since 1981, the active partnership between MDC, the USDA Natural Resources Conservation Service (NRCS) and the USDA Farm Service Agency (FSA) have helped Missouri’s landowners protect, restore and enhance wildlife habitat in many ways, most significantly through the Conservation Reserve Program (CRP) and the Wetlands Reserve Program (WRP). Missouri is one of the top 10 states in the nation in acres of habitat conserved in both programs.

“Wildlife depends upon healthy soil and quality water, the same as people do,” says NRCS State Conservationist J.R. Flores. “Our partnership with MDC provides the opportunity to work with Missouri landowners and show them that it is possible to enhance soil quality, water quality and wildlife habitat on the same acres. For many years, Missouri has been a leader in the management of natural resources to benefit wildlife. Part of the reason is the willingness of federal and state agencies to work together for the common good.”



SHOW ME MORE QUAIL

Private landowners are the key to improving quail habitat. MDC works with tens of thousands of Missouri landowners to help them achieve their land-use objectives. About 17,000 of these landowners receive assistance with quail habitat.

In addition to technical assistance, such as habitat-management planning, MDC provides about \$500,000 in cost-share funds to private landowners that go directly to quail habitat needs annually. MDC also works with several partner organizations to help deliver an average of \$280,000 in matching funds directly for quail needs. MDC staff also helps private landowners apply for more than \$150 million in funds

available through USDA Farm Bill programs, such as the Conservation Reserve Program and Conservation Buffers for Upland Birds.

MDC supports more than 30 private-land quail focus areas, where we offer additional cost-share opportunities and services, such as loaner equipment to help create quail habitat. MDC also works with partner organizations, including Quail Unlimited, Quail and Upland Wildlife Federation, and Quail Forever and Pheasants Forever, on quail restoration. Members of several quail cooperatives help each other improve wildlife habitat and involve youth with habitat projects and wildlife education.

Visit MDC's More Quail blog at mdc.mo.gov/node/8728 and learn ways to improve quail habitat at mdc.mo.gov/node/4693.



Bobwhite quail

The Farm Bill's CRP program provides multiple benefits to Missouri citizens. CRP allows landowners with highly erosive land to establish permanent vegetation, such as grass or trees. In return for temporarily taking the land out of production, the landowner is paid a certain amount per acre each year. Missouri currently has approximately 1.4 million acres enrolled in CRP. CRP has saved thousands of tons of soil from being lost through erosion, and has improved water quality, improved soil health and provided wildlife habitat.

WRP acreage in Missouri exceeds 140,000 acres, putting Missouri in the top five states for this Farm Bill program. WRP helps to remove cropland from production that experiences repeated flooding, expensive crop damage and excessive soil erosion. The restored wetlands benefit people throughout entire watersheds by enhancing water quality by naturally filtering and trapping nutrients, chemicals and sediment. They also provide excellent fish nurseries when connected to the main channel, as well as wildlife habitat for ducks, geese, amphibians and shore birds.

The Farm Bill's Habitat Buffers for Upland Birds program provides excellent habitat for quail and other upland wildlife while helping farmers reduce herbicide use and expense on crop edges, where production is often poor. To date, Missouri has enrolled more than 34,000 acres of native-grass field borders along cropland edges. Landowners receive cost share for establishing vegetative cover and an annual rental payment.

"We have the third highest acreage of this practice in the nation, even though we have less grain crop acres than neighboring Midwest states," says Lisa Potter, MDC Farm Bill coordinator. "Nationwide, the habitat buffers have proven beneficial to quail and several songbirds compared to crop fields without buffers. We are eager to measure those benefits in Missouri."

In 2008, the USDA Farm Service Agency introduced the State Acres for Wildlife Enhancement (SAFE) practice of the Conservation Reserve Program, which focuses on establishing habitat for quail, prairie chickens and other declining wildlife. Similar to other CRP



Since 2002, more than 10,000 acres of prairie, glade, savanna and woodland have been restored through the Environmental Quality Incentives Program and the Wildlife Habitat Incentives Program on private land.

practices, participants may receive cost share, incentives and annual rental payments. In Missouri, SAFE has enrolled 19,785 acres of quail, prairie chicken and grassland bird habitat.

MDC also helps landowners benefit from two other popular federally funded programs, NRCS's Environmental Quality Incentives Program (EQIP) and its Wildlife Habitat Incentives Program (WHIP). Both programs provide technical assistance to implement glade, savanna and woodland restoration projects, develop forest stewardship plans and enhance quail habitat.

Since 2002, more than 10,000 acres of prairie, glade, savanna and woodland have been restored through EQIP and WHIP on private land. Since 2008, more than \$11 million in cost share has been provided to Missouri landowners to improve forests and habitats for wildlife—almost \$3 million in cost share through EQIP and WHIP for forestry-related practices alone.

MDC has 57 full-time staff co-located in USDA service centers around the state to create a “one-stop” shop for landowners.

SOIL, WATER AND TEAMWORK

The Department also works hand-in-hand with the state's Soil and Water Conservation Districts (SWCDs) to help landowners manage and conserve the state's nat-

ural resources. Found in each of Missouri's 114 counties, these Districts provide financial incentives to landowners to implement conservation practices that help prevent soil erosion and protect water resources.

The Department helps many SWCDs purchase and loan out specialized equipment to help landowners create wildlife habitat improvements, such as tree planters, root plows, native grass drills and prescribed burn equipment. In turn, the SWCDs provide a means to loan the equipment to landowners and keep it in working order.

“We have a great partnership,” says Dalbom. “We organize educational workshops for landowners and bring together programs for school events. A SWCD will sponsor a prescribed burn workshop for MDC, and the Department will assist them with a Conservation Kids' Day in their county. Local Soil and Water Districts have also helped by signing landowners up for Department incentives that result in better wildlife habitat on the land. This long-standing partnership has made a lasting impact on the landowners and the landscape of Missouri.”

PRESERVING OUR OUTDOOR HERITAGE AND ECONOMY

“In Missouri, all of the people own conservation. It's a partnership between all of us, and we all benefit from

LANDOWNERS AND TRUST FUND BENEFIT STREAMS

Private landowner Gordon Clayton of Lawrence County used the Stream Stewardship Trust Fund to correct years of mismanagement along a stream on property he purchased in 2004. The stream, Cracker Neck Branch, had the lower two miles channelized years ago. This caused a headcut as the stream tried to regain its natural grade, lowering the streambed and creating raw, vertical streambanks with heights of 15 feet or more.

One of Clayton's first steps was removing livestock and planting trees on either side of the stream. Clayton worked with the Farm Service

Agency and the Natural Resources Conservation Service (NRCS) offices in Lawrence County and MDC to determine that grade control structures were needed to capture the headcut and return the stream's grade to a more natural state. These structures can be expensive. Fortunately the Missouri Conservation Heritage Foundation's Stream Stewardship Trust Fund was able to help fund this project.

Now that the structure is in place, Clayton is well underway to establishing more than 9 acres of riparian corridor and wetland buffers. With time and the added stability provided by the grade control structures, the streambank vegetation will flourish and the stream will become healthier. This project, and others like it, benefit adjacent landowners and local fisheries.

Clayton's project is one of many small success stories between private landowners, the Department and other partners. Funding comes in part from the Stream Stewardship Trust Fund, overseen by the Missouri Conservation Heritage Foundation. The Fund receives monies from developers, agencies or individuals seeking a 404 permit from the U.S. Army Corps of Engineers, which enforces the Clean Water Act for required mitigation work. Those funds are used for stream projects that meet the Foundation's responsibility to restore, enhance or preserve the stream resource.

The Missouri Conservation Heritage Foundation has allocated more than \$4.5 million from the Stream Stewardship Trust Fund to stream protection and improvement projects since the program began 12 years ago.



Upland sandpiper

the rewards of it,” says White. “The success we’ve seen in Missouri speaks to the strong conservation foundation we’ve built and the continued commitment Missourians have. MDC has worked out in the fields, with landowners throughout the state, for several generations now to strengthen and improve our lands to benefit both people and wildlife.”

Restoring wildlife habitat is not only pleasing to the eye, but also benefits the economy of Missouri. The total economic impact of fish and wildlife recreation and the forest products industry in Missouri is \$11.7 billion dollars annually. This local activity helps to sustain the 95,000 Missouri jobs that are supported annually through fish, forest and wildlife recreation.

A COMMON CAUSE

Natural resource management is very complex and challenging. “The simple fact is that landscape changes—positive and negative—are related to how we all use the land,” says George Seek, retired MDC private land services division chief. “Soil, water and wildlife conservation form an inextricably linked brotherhood—one cannot flourish without the others. The health and vitality of our

The Farm Bill’s Habitat Buffers for Upland Birds program provides excellent habitat for quail and other upland wildlife while helping farmers reduce herbicide use and expense on crop edges, where production is often poor. To date, Missouri has enrolled more than 34,000 acres of native-grass field borders along cropland edges. Landowners receive cost share for establishing vegetative cover and an annual rental payment.

natural resources provide the foundation for healthy and sustainable economies and the foundation for sustainable life. In the end, we’re doing exactly what Theodore Roosevelt defined as conservation, which was using common sense, for a common cause, for common good.” ▲

Contact your local MDC private land conservationist for information about incentives and cost-share programs, and schedule a visit to evaluate and develop a plan to enhance the wildlife habitat on your property. Find your contact at mdc.mo.gov/node/3676 or call your regional office (see Page 3). Learn more about MDC’s programs that benefit rural and urban landowners at mdc.mo.gov/node/90.

Putting Down ROOTS

Pioneer Forest celebrates 50 years of sustainable forest management.

by BRETT DUFUR

THIS YEAR THE L-A-D FOUNDATION celebrates its 50th anniversary and the Department its 75th. This long-standing conservation partnership, which began more than 50 years ago in the Ozark forests, will continue to benefit Missourians for generations to come.

Pioneer Forest in the Missouri Ozarks

L-A-D's founder, Leo Drey, is widely known for buying mostly worn-out forestland in the Ozarks in the 1950s. These lands became Pioneer Forest, and Leo eventually became the largest private landowner in the state. His Pioneer Forest now encompasses more than 141,000 acres along the Current and Jacks Fork rivers. In 2004, Leo and his wife, Kay, conveyed Pioneer Forest to the L-A-D Foundation to ensure it will always be managed sustainably and will continue to be accessible for new generations of Missourians to enjoy.

Leo credits the early efforts of the Department for his initial success. "My objective was to get hold of this wild land and show it could be managed along conservation lines without going broke in the process, by selectively cutting individual trees instead of clear-cutting it," Drey says. "It was all because of the way the Department began to get fires under control that you could afford to buy land, manage it for timber and let it grow to maturity."

In the process of demonstrating how to restore forests on once cut-over Ozark land, Leo's Pioneer Forest now provides dependable jobs for many families and more than a hundred individuals in several Ozark counties. The simplest way to describe Pioneer's management is that every 20 years, trees are selected for removal. You cut the worst and leave the best from every age and product class.





Cave Spring is easily reached by river or hiking trail. The cave entrance is on L-A-D Foundation land along the Current River in Shannon County. By canoe from Akers Ferry put-in, it is about 5.2 miles downriver along the left bank. Or hike in from the Devil's Well Trailhead, located between Highway 19 and Akers Ferry.

“Known as single-tree selection, this method is both science and art,” says Pioneer Forest Manager Terry Cunningham. “Periodic field inventories guide the volume removed from the forest each year, point out certain forest health issues, and define the dynamics of age classes and overall forest structure. Removing individual trees creates canopy openings, allowing sunlight to reach the forest floor and allows for regeneration to occur.”

Using single-tree selection matches some natural processes, such as insects and disease, ice and windstorms and old age. It also achieves Pioneer Forest’s social objectives of economic sustainability, recreation, wildlife and aesthetics. After 60 years of forest management, Pioneer Forest’s method has worked very well.

“Because cutting on Pioneer Forest leaves behind more trees of all sizes than are cut, the result is every acre is forested before and also after a harvest,” says Cunningham. To illustrate that point, he recalls a third-generation local timber harvester saying, “I remember being here when my grandfather was cutting trees, then 20 years later when my father was cutting trees, and today I’m cutting the trees from this very same hillside.”

As Pioneer Forest’s wood products go through various value-adding steps to produce oak flooring, railroad ties and blocking for shipping, their positive effects reach many more families throughout Missouri.

“The L-A-D Foundation has provided a great legacy, and serves as an example of how to manage a forest,” says MDC Director Robert L. Ziehmer. “The L-A-D Foundation is committed to sustainable forest management, research and education. The Foundation is a leader in single-tree selection uneven-aged management. The Foundation is also a leader in natural resource management research, including the Continuous Forest Inventory plots on the Pioneer Forest, which they have monitored every five years since 1952.”

The Foundation and the Department continue working together to evaluate management on Pioneer Forest, and to train and recognize outstanding loggers in Missouri.

“Pioneer Forest serves as a Missouri role model of sustainable forest management on privately owned land,” says Lisa Allen, MDC



state forester. “The Foundation foresters have been fantastic advocates for promoting and using loggers who have been trained through the Missouri Forest Products Association’s Professional Timber Harvester training and certified through the Master Logger Program to ensure best management practices for harvesting timber are used for all Pioneer Forest lands. Because loggers are held to a high standard while working in Pioneer Forest, they learn best management practices that they then take to other privately owned woodlands.”

Natural Areas in Eastern Missouri

Early on, the L-A-D Foundation helped fund the inventories of many sites of natural or geological importance in the state. In several cases, Drey acquired these important areas and placed them in the care of L-A-D, which then leased most of them to MDC for day-to-day management. One such area was Clifty Creek Natural Area in Maries County. In 1971 it was among the first designated State Natural Areas. Subsequently, MDC acquired adjoining acreage. By working together, this beautiful place has now been conserved for all Missourians to enjoy. An award-winning trail was dedicated there two years ago.

“Missouri’s natural areas program owes much to the pioneering work of Leo Drey and the

“My objective was to get hold of this wild land and show it could be managed along conservation lines without going broke in the process... It was all because of the way the Department began to get fires under control that you could afford to buy land, manage it for timber and let it grow to maturity.”

—LEO DREY



The L-A-D Foundation's founder, Leo Drey, is widely known for buying Ozark forestland in the 1950s and turning it into Pioneer Forest. The L-A-D Foundation is celebrating its 50th anniversary this year.

Brohn, an assistant director of the Conservation Department during the 1970s and 1980s, is remembered at Hickory Canyons Natural Area, which he helped establish while serving as chairman of the Missouri Natural Areas Committee.

A Legacy of Greater Good

Most L-A-D Foundation land is within the Current River Conservation Opportunity Area, a geographic region rich in native plants and animals and their habitats. But L-A-D staff also works with the Department wherever they can to protect less common plants and animals in caves and on glades, fens and in sinkholes. For example, in Perry County, Department staff has begun long-term work on Foundation land to restore a sample of grassy woodland on the Perry County Karst Plain, which will better protect groundwater resources associated with Ball Mill Resurgence Natural Area and Blue Spring Branch. This karst plain has more and longer caves than anywhere else in Missouri. It is an especially important effort because there is relatively little public land in this area. This work is already being used as a demonstration site for teachers and landowners.

As long as 40 years ago, Drey suggested that Pioneer Forest land could be considered as habitat for large native mammals. Today, that expansive area has become part of the range of the elk reintroduced to Missouri after being gone for 150 years. If you talk with L-A-D's staff, they will tell you that black bears never left Pioneer Forest.

The conservation partnership between MDC and the L-A-D Foundation has been long and productive, and Missourians can look forward to additional success stories for Missouri forests, woodlands and rivers in the years ahead. For more information on the L-A-D Foundation, visit ladfoundation.org. Learn more about Missouri's natural areas program at mdc.mo.gov/node/2453. ▲

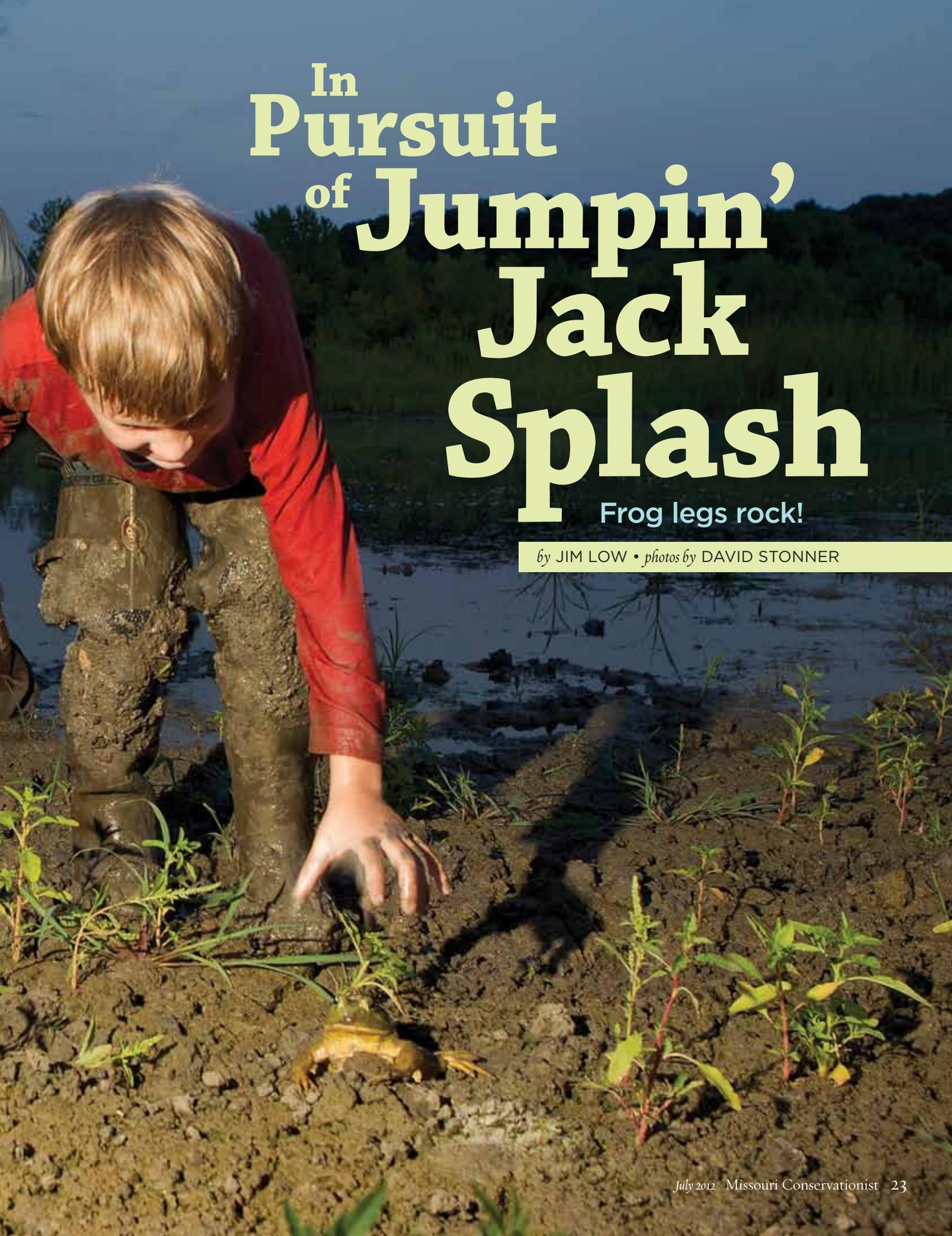
L-A-D Foundation," says Mike Leahy, MDC natural areas coordinator. "Since the early 1970s, the Foundation has been a key partner with the Department, as well as with Missouri State Parks, the Mark Twain National Forest, the Ozark National Scenic Riverways and The Nature Conservancy, in protecting the state's natural heritage. From Greer Spring and Grand Gulf to Hickory Canyons, the L-A-D Foundation has helped protect some of the best natural features in the state."

In all, the L-A-D Foundation leases seven Missouri Natural Areas to MDC, totaling more than 2,000 acres. Four additional Missouri Natural Areas are located on L-A-D's Pioneer Forest. One of these, Current River Natural Area, was also the first Missouri area to be recognized by the Society of American Foresters Natural Areas program back in 1955, pre-dating the Missouri Natural Areas Program. It is remarkable for its stand of large white oak trees, some more than 400 years old.

Two of L-A-D's Missouri Natural Areas pay special tribute to highly respected Conservation Department staff. Charles Callison, editor of the *Missouri Conservationist* in the 1940s, and later a well-known national leader with the Audubon Society, is remembered at Rocky Hollow Natural Area in Monroe County where he grew up. Allen



Brad Wright and his grandson, Emmett, grab frogs at Eagle Bluffs CA late last summer.

A young boy with light brown hair, wearing a red long-sleeved shirt and dark, muddy boots, is crouching in a field. He is looking down at a frog on the ground. The ground is dark and muddy with some small green plants. In the background, there is a body of water and some trees under a clear blue sky.

In Pursuit of Jumpin' Jack Splash

Frog legs rock!

by JIM LOW • photos by DAVID STONNER

FROGS ARE MYSTERIOUS creatures. They inhabit places humming with mosquitoes, yet thousands of Missourians visit such places—in the dark—to pursue them. In spite of their oozy haunts and slimy skin, these amphibians find a place on the menus of five-star restaurants. Can the ounce or two of flesh on their legs really account for frogs' popularity?

Here is my theory: Frogs are the legendary "Fountain of Youth." That's right; Ponce de Leon waded right past the object of his quest without a second look. It took someone more interested in fun than fame to recognize that tramping around in shallow water at night chasing frogs brings out the 6-year-old in us.

Frogging and giggling go together like mud puddles and mud pies. You might even experience the urge to skip instead of walk. If you have never tapped this fountain of youth, read on. Here is everything you need to know to join the Ever-Youthful Fraternity of Froggers.

Prizes, Sizes and Venues

Missouri is home to two delicious members of the hopping tribe that may legally be harvested for the table. By far the most coveted is the bullfrog (*Rana catesbeiana*). Size is its primary virtue. The bullfrog is North America's largest native frog. A real monster can measure 8 inches



The season for bullfrogs and green frogs begins June 30 at sunset and ends October 31 at midnight.

all scrunched up and ready to jump. When it springs into action, you get a fleeting look at the real attraction, 7 to 10 inches of legs.

The other game species is the green frog (*Rana clamitans melanota*). Its meat tastes the same as the bullfrog's, but this species tops out at just 4 inches from nose to vent. Although they provide less meat, a possession limit of 32 petite frog legs is enough to justify getting in touch with your inner child.

Almost anyplace with enough water to float a canoe is likely to harbor at least a few frogs. Places that thaw early and freeze late generally have larger frogs, but you can find decent frog populations in farm ponds and huge reservoirs, creeks, drainage ditches and rivers, sloughs, marshes and swamps statewide.

With so many options, how do you choose? Scouting is as simple as visiting potential venues just after dark and listening for the throaty "jug-o-rum, jug-o-rum," of mature male bullfrogs. The green frog's call is just as distinctive, consisting of one to four "bonks!" They sound like someone plucking a banjo string that is a little slack. In both species, the deeper the voice, the bigger the frog.

Do you need a boat? That depends. Wading works fine in shallow water, which describes most frogging spots. On the other hand, steep banks or edges overhung with vegetation can be unapproachable without a boat. In general, less boat is better, because stealth is important when trying to get close enough to bag a frog.

My Most Memorable Amphibian

Over the years, I have gotten on a first-name basis with a few frogs. One was an enormous bullfrog on the North Fork River. I hunted him throughout one summer and well into autumn.

King Jeremiah, as I called him, held court each night in the middle of a floating castle of coontail 6 feet across. The water around his lair reached my armpits. My arms are considerably less than 3 feet long, so I had to ease into his mossy moat one or two feet to get within grabbing distance. Only once did I manage this feat without disturbing the coontail enough to warn the monarch of my approach.

On that last try in mid-October, I got hold of one of his legs, but he used the other foot to pry himself free and once again slipped beneath the coontail, leaving hardly a ripple.

I plotted my next campaign throughout the winter, but when I returned the following summer, Jeremiah was no longer there. Did he perish during the winter? Did another predator claim him, or did his brush with fate cause him to relocate? That is just one of frogging's enduring mysteries.



What Snakes?

For as long as I have been frogging, I have heard people say I am crazy for venturing into snake-infested waters at night and grabbing frogs with my bare hands without knowing what lurks in the shadows. I figure there are no more snakes at night than during the day, and I am not going to let a few reptiles keep me indoors. In half a century of frogging, I have seen exactly one venomous snake. It was holed up in a root wad, minding its own business. I am inclined to believe this danger exists mostly in other people's heads.



Just getting your hands on a frog is no guarantee of success. They are surprisingly adept at squirming free. Encircling their waist tightly with thumb and forefinger provides the surest grip.

Methods and Gear

Frogging is unlike most other legitimate forms of hunting in that using an artificial light is not merely legal, it's indispensable. Frogs have excellent night vision, and because they are on the menu for lots of predators besides humans, they must be wary and fast on their webbed feet. Consequently, you stand little chance of getting the drop on one unless you shine a light in its eyes.

Brightness and portability are the two most important characteristics for a frogging light. I prefer a hand-held spotlight with a rechargeable battery. Headlamps and ordinary flashlights are better than nothing, but they often are not bright enough to prevent frogs from seeing you.

Frogging often requires two hands, so work-

ing with a partner is advisable. One of you can handle the light while the other stalks the frog. A third person is handy if you use a boat.

No other game animal permits so wide a range of legal methods of take. You can even take your pick of whether to pursue frogs with a hunting or fishing permit.

A hunting permit allows you to use .22-cal. or smaller rimfire rifle or pistol, pellet gun, bow, crossbow, atlatl, hand net or your bare hands. With a fishing permit, you can take frogs by hand, hand net, atlatl, gig, bow, trotline, throw line, limb line, bank line, jug line, snaring, grabbing (what most people call "snagging") or pole and line.

Firearms demand least in terms of stealth. Rimfire pistols or rifles can be used safely only

The Legler Scale

Fisheries biologist Bob Legler, now retired, taught me much about frogging lore, including a unique grading system based on frog size. Bob strove to fill his limit with either “jumbos”—frogs measuring approximately as long as his hand—or “superjumbos”—anything bigger than jumbo. I have developed my own system of size classes based on the names of froggers I have known. I withhold those categories to avoid hard feelings, but I encourage you to devise your own.

if you limit yourself to shooting straight down. Using a pellet gun vastly reduces the risk of errant shots due to ricochet.

I don't like using firearms, because I always lose some frogs that leap into the water when shot. Using hollow-point bullets helps but does not eliminate this problem altogether.

I have tried most of the legal methods and settled on two as most satisfactory. I like taking frogs by hand because of the skill and patience needed to get within arm's length of my quarry. Just getting your hands on a frog is no guarantee of success. They are surprisingly adept at squirming free. Encircling their waist tightly with thumb and forefinger provides the surest

grip. Jersey gloves make it easier to get a grip on frogs' slippery bodies.

Grabbing frogs is great fun, but when food on the table is my top priority, I take advantage of frogs' voracious appetite and their apparent conviction that they can swallow anything less than twice their size. No frog can resist a fishing lure splashed around in front of it. You need a surprisingly stout fishing rod to catch big frogs. An 8-foot catfish rod spooled with 20-pound line is perfect.

In warm weather, I prefer to wear old sneakers or lace-up boots that are on their last legs while frogging. Hip waders keep mud and water out, but you will be soaked with perspiration within minutes anyway.

A bag is a handy way to keep live frogs, but it makes counting them tricky. If you use one of the lethal hunting methods, it makes sense to keep frogs on a fish stringer. Either way, remember that the *Wildlife Code* requires you to keep your frogs separate from those taken by partners.

Insect repellent is a must for summer frogging. Long sleeves and a head net also help keep mosquitoes at bay.

Other than that, all you need is a sense of adventure and maybe a kid to jumpstart the rejuvenation process. ▲

Satisfaction

Before you can enjoy frog legs, you have to clean them. Start by dispatching live frogs with a sharp blow to the head. Next, use game shears to separate the legs from the torso at the waist. Next, slide a fillet knife between the skin and the flesh of each leg and slice through the skin. Catfish-skinning pliers or a pair of jersey gloves will aid in gripping and removing the slippery skin. Soak the skinned legs in saltwater.

Contrary to what some people say, frog legs don't taste like chicken. Crappie is closer to the truth. They do move a little when dropped into hot oil, but it takes an overactive imagination to say they kick or hop.

Almost any fish recipe can be used for frog legs. Here are two of my favorites.

Frog legs in garlic sauce

Thoroughly dry six large frog legs. Melt four tablespoons of butter in a skillet on medium heat. Add one rounded teaspoon of chopped garlic and cook for 30 seconds. Add the frog legs and simmer until lightly browned. Turn and brown the other side. Remove frog legs to a serving plate and place in a warm oven. Add $\frac{3}{4}$ cup of chopped green onion to the frying pan and cook until the onions are wilted. Add $\frac{1}{2}$ cup of dry white wine and simmer, using a spatula to remove and dissolve the residue from the bottom of the pan. Reduce this stock by half, then pour over the frog legs and serve with thick slices of toasted and buttered sourdough bread.

Cajun legs

Remove 1 pound of frog legs from saltwater. Do not dry. Sprinkle liberally with commercial Cajun seasoning. Mix three teaspoons of Cajun seasoning with one cup of flour in a shallow bowl. Dredge frog legs in flour. Heat six tablespoons of olive oil in a large frying pan. Sauté the frog legs in oil on medium heat for 3 minutes or until golden brown. Turn and brown other side. Add one cup chopped green onions and cook another minute. Add 1 cup canned, diced tomatoes and simmer for two minutes. Add $\frac{1}{4}$ cup of dry white wine and cook another two minutes. Add more Cajun seasoning if needed and serve over rice.

Barred Owl

The big eyes and big voice of this woodland bird delights Missourians across the state.

I STEPPED ONTO his back porch and scanned his yard. “Where are they?” I asked in a whisper, eager to meet his summer guests. “Oh, they’re around,” Art Tilley responded with confidence, “Let me try to call them up.” Expecting to hear a set of quadruple hoots, I listened as he spoke in a soft voice, “Hey, my friends, we have a visitor. Come and meet Danny.” As I began to congratulate myself for not unpacking my camera gear too soon, three barred owls, an adult and two juveniles with fuzzy heads, emerged from the shadows and lighted on tree limbs, close, right before my eyes. It was too good to be true. “Would you like a cup of French roast?” Tilley asked. I wondered if the morning could get any better!

Tilley had contacted me earlier in the week to ask if I was interested in photographing some owls. As I asked my standard questions regarding species identification, subject distance, sun direction, and so on, I determined that the owls in Tilley’s backyard were definitely worth a look. I accepted his gracious offer and made my way to his home in Chesterfield the following Saturday morning. Upon arrival, Tilley explained that the barred owls had nested nearby and had been visiting his yard every morning and afternoon to feed on the bountiful supply of cicadas emerging from the ground beneath his shade trees. He knew all of their favorite perches and gently suggested where to point my lens for best results.

The barred owl (*Strix varia*) is a large brown owl with dark eyes and dark brown streaks, or bars, which run horizontally across its neck and vertically down its chest. Barred owls are found along forested streams, lakes, rivers, and swamps, especially where large cavity trees are available for nesting. Although considered nocturnal, I’ve found barred owls to be quite active at dawn and dusk as they hunt from favorite perches along the wooded edges of the hayfields behind our house. Prey includes voles, mice, rabbits, snakes, frogs, crayfish and insects. Never too far from water, barred owls have even been known to capture fish in shallows.

Most people are familiar with the barred owl’s call which resembles the phrase, “Who cooks for you; who cooks for you all?” but their vocal repertoire also includes caterwauling that rivals the bawls of a love-crazed bobcat. Courtship begins in late winter and eggs are hatched by early spring. Fledging occurs about a month and a half later. As with Tilley’s barred owl visitors, the young may spend several months with their parents, learning the skills necessary for survival.

I visited Art Tilley several times last summer, even after the owls dispersed. As we sat on his back porch, enjoying his Saturday morning tradition of pancakes and coffee, we talked of hunting, fishing and other outdoor pursuits. I expect we’ll be friends for a long time. We can thank the barred owls for that.

—Story and photo by Danny Brown

 500mm lens • f/4 • 1/25 sec • ISO 200

We help people discover nature through our online field guide. Visit mdc.mo.gov/node/73 to learn more about Missouri’s plants and animals.





Valley View Glades Natural Area

Hike, view wildlife and enjoy wildflowers at one of Missouri's "original landscapes" in Jefferson County.



EVER WONDERED WHAT the area around St. Louis looked like when the French settlers arrived? If so, you'll enjoy hiking the Valley View Glades Natural Area in Jefferson County. The Department of Conservation acquired the rugged, rocky, lightly used property in 1982. As a result of light impact, long-term protection and sustain-

able management, this 227-acre designated natural area remains one of the richest examples of dolomite glades in the Ozark border region.

Unfamiliar with the term *glades*? They're a type of desert-like habitat with thin, rocky soils. Dolomite is a kind of sedimentary rock, sometimes called magnesium limestone. Glades and associated woodlands include several different kinds of microhabitats, and these provide many niches for plants and wildlife. Consequently, Valley View Glades, with everything from stream ledges to dolomite outcroppings, is home to more than 250 native plant species and 25 native butterfly species. It also supports many kinds of snakes and lizards, as well as larger animals, such as deer and turkey.

The area still has many of the plant species Europeans found when they arrived in the 1600s. Native grasses include little bluestem, Indian grass, big bluestem and prairie dropseed. Native wildflowers provide good wildlife food and add beautiful color to the glades during peak bloom in early June and throughout the growing season. The Fremont's leather flower, one of the glades' most interesting plants, occurs only in this part of Missouri. Wildlife finds value in the area's small pockets of dry, cherty, blackjack-oak-dominated woodlands.

Managers use periodic prescribed burns and occasional thinning of eastern redcedar and other woody plants to restore and maintain the area's natural diversity. Without this management, redcedar would take over the glade-adapted plants, and wildlife would decline. In centuries past, fires lit by Native Americans and lightning kept these mini-deserts open and diverse.

The 2.5-mile Valley View Glades Trail provides hikers a nice loop through the glades, associated woodlands and wildflowers. Hunting is permitted in season.

To reach the area, travel west on Highway B from the intersection of Highway 21 and Highway B in Hillsboro for 4.5 miles to the parking lot on the right (north) side of the road. As always, check the area's website, listed below, for notices, regulations and more information before traveling.

—Bonnie Chasteen, photo by Noppadol Paothong

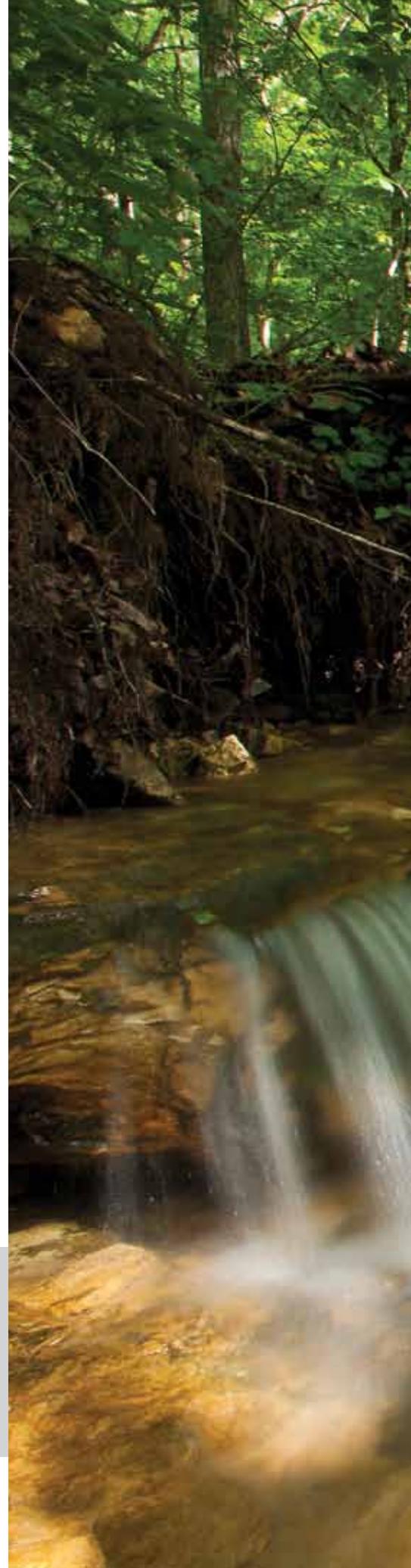
📷 17–40mm lens • f/22 • 1.3 sec • ISO 100

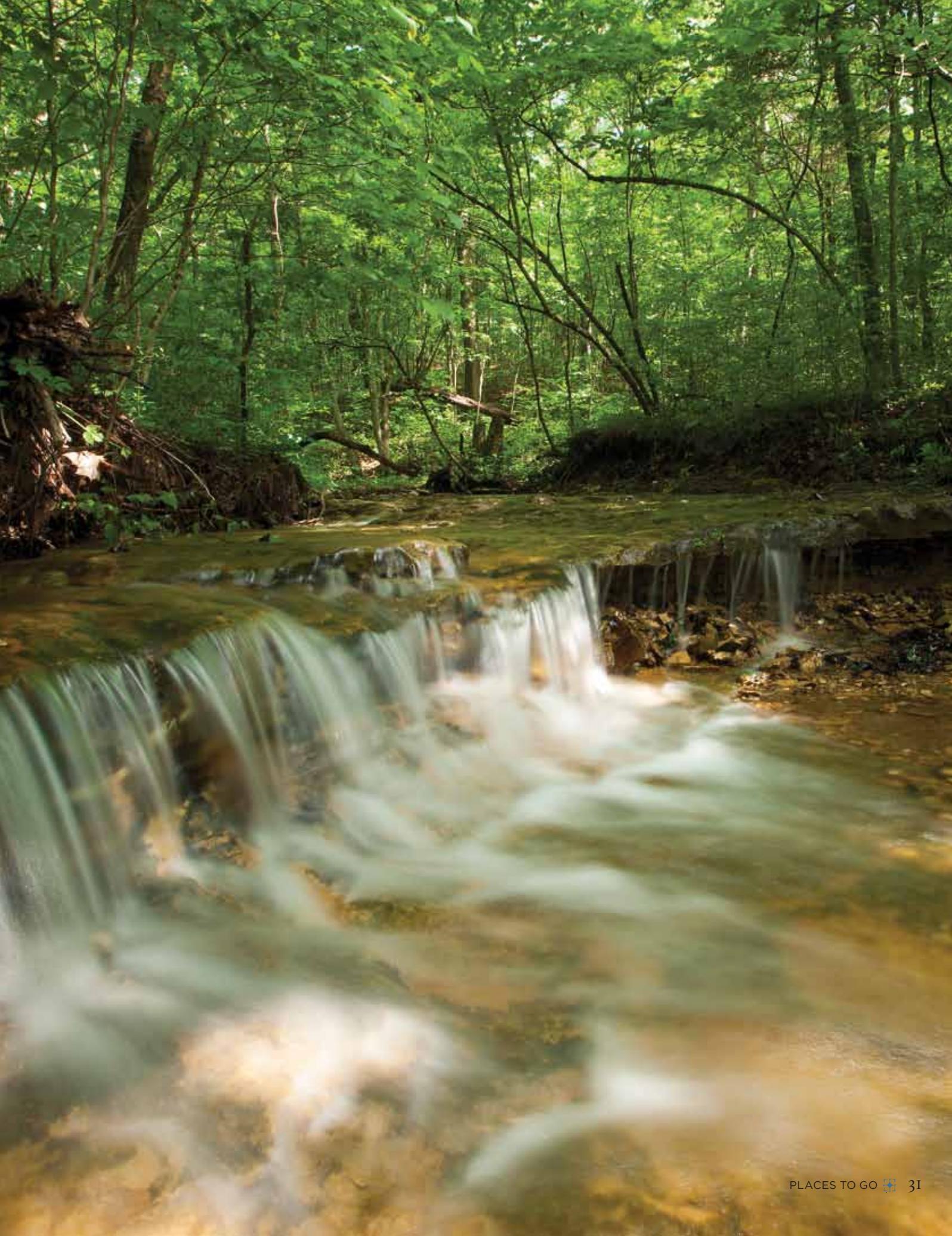
Recreation opportunities: Birding, hiking, hunting in season, outdoor photography and nature viewing

Unique features: 2.5-mile trail loop through dolomite glade

For More Information

Call 636-458-2236 or visit mdc.mo.gov/a8213.





Hunting and Fishing Calendar

FISHING

	OPEN	CLOSE
Black Bass from Ozark streams	5/26/12	2/28/13
Bullfrogs and Green Frogs	Sunset	Midnight
	6/30/12	10/31/12
Nongame Fish Giggling	9/15/2012	1/31/2013
Trout Parks 3/01/12	10/31/12	

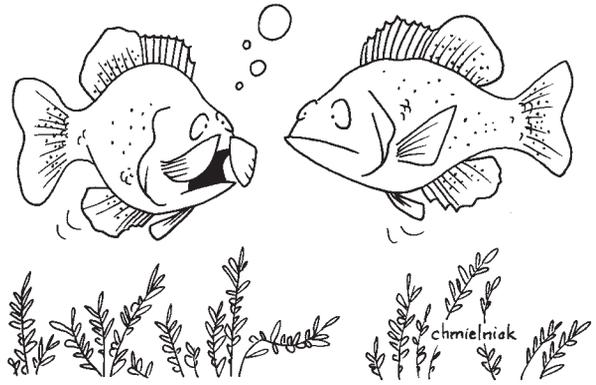
HUNTING

	OPEN	CLOSE
Coyote	5/07/12	3/31/13
Deer		
Archery	9/15/12	11/09/12
	11/21/12	1/15/13
Firearms		
Urban Zones	10/05/12	10/08/12
Early Youth	11/03/12	11/04/12
November	11/10/12	11/20/12
Antlerless	11/21/12	12/02/12
Alternative Methods	12/15/12	12/25/12
Late Youth	12/29/12	12/30/12
Dove	9/01/12	11/09/12
Furbearers	11/15/12	1/31/13
Groundhog	5/09/12	12/15/12
Pheasant		
Youth (North Zone Only)	10/27/12	10/28/12
North Zone	11/01/12	1/15/13
Southeast Zone	12/01/12	12/12/12
Quail	11/01/12	1/15/13
Youth	10/27/12	10/28/12
Rabbit	10/01/12	2/15/13
Rails (Sora and Virginia)	9/01/12	11/09/12
Squirrel	5/26/12	2/15/13
Turkey		
Archery	9/15/12	11/09/12
	11/21/12	1/15/13
Firearms	10/1/12	10/31/12
Waterfowl	please see the <i>Waterfowl Hunting Digest</i> or see mdc.mo.gov/node/3830	
Wilson's (common) Snipe	9/01/12	12/16/12
Woodcock	10/15/12	11/28/12

TRAPPING

	OPEN	CLOSE
Beaver and Nutria	11/15/12	3/31/13
Furbearers	11/15/12	1/31/13
Otters and Muskrats	11/15/12	2/20/13

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* or the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, *The Spring Turkey Hunting Regulations and Information*, the *Fall Deer and Turkey Hunting Regulations and Information*, the *Waterfowl Hunting Digest* and the *Migratory Bird Hunting Digest*. For more information visit mdc.mo.gov/node/130 or permit vendors.



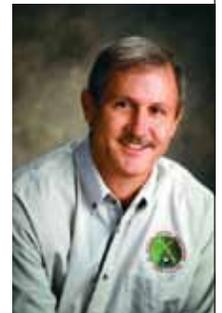
"Notice how after catch-and-release your fins always smell like humans?"

Contributors



BRETT DUFUR, an MDC editor, is writing a history of the Department for its 75th anniversary. He has authored numerous books on Missouri's outdoors including the Katy Trail, wine country and the Lewis and Clark Trail. He lives in Rocheport with his family and loves to paddle the Missouri River and explore wild places.

Staff writer JIM LOW has been chasing frogs since he got his first BB gun at about age 8. Fifty-odd years later, the sight of a pair of glowing eyes at water's edge still makes his heart skip a beat.



Operation Game Thief

Help put game thieves out of business. If you see a possible violation in progress, call your county conservation agent immediately or dial the toll-free number below:

1-800-392-1111

All information is kept in strict confidence. Desirable information includes names of violators, vehicle description and license number, as well as the violation location.

AGENT NOTES *Agents Partner with Landowners*

MISSOURI LANDOWNERS OFTEN ask how to improve wildlife habitat on their property. I can remember, as a child, being on my grandfather's farm in Morgan County and having the local conservation agent pull up to visit with us. The agent would ask how hunting was going and if anyone had much luck. We would then ask him what we could do to improve the property for better hunting or pond management.

Now that I am an agent, I feel privileged to be able to work with landowners and continue the tradition. MDC staff work with more than 70,000 landowners annually to improve habitat and sustain healthy fish, forests and wildlife in a variety of ways. Conservation agents continue to play a vital role in this area as they visit with landowners on a daily basis, and help to foster a healthy cooperative relationship. Some of our visits may be brief phone conversations, while others can last many hours walking a property to provide suggestions or insight.

More than 90 percent of the land in Missouri is privately owned. This is an important factor when it comes to sustaining healthy habitat. When landowners get involved in building a healthy habitat for wildlife it helps agents as well, because of the mutual rapport we have developed with these cooperators who are more likely to contact an agent and report suspected wildlife violations. For help managing your land for wildlife, contact your regional MDC office (see Page 3), or visit mdc.mo.gov/node/3676.



Derek Warnke is the conservation agent for Washington County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.





Subscribe online • mdc.mo.gov/node/9087 • Free to Missouri households



I Am Conservation

Missouri conservation is unique—unique in the way it derives its authority and funding from citizens, and unique in the passion and commitment of Missourians to perpetuate this legacy. On July 1, 1937, the constitutional amendment creating the Missouri Conservation Commission took effect, creating an apolitical, science-based conservation agency with exclusive authority over forests, fish and wildlife. The Commission is made up of four citizen commissioners, with no more than two from the same political party. Our current Commission celebrating 75 years of citizen-led conservation is (from left) James T. Blair, IV, Don R. Johnson, Becky L. Plattner and Don C. Bedell. The governor appoints commissioners for six-year unpaid terms. The Commission serves as the Department's policy maker, approves *Wildlife Code* regulations, and oversees strategic planning, budget development and major expenditures. —*Photo by David Stonner*