

MISSOURI. Conservationist

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Conservation Science

There are more fields of scientific study now than there were when I started my conservation career more than 30 years ago. One young field that has grown considerably in that time is conservation science.

The Department of Conservation has been practicing conservation science for more than 70 years. Two years after it was officially formed, the Conservation Commission openly stated: “The Commission cannot perform an intelligent job of enforcement, regulation or management without sound basic facts. Fact-finding and research are therefore essential before the Commission reaches any of its conclusions on important matters.”

Managing the fish, forest and wildlife resources of Missouri requires sound scientific information in the areas of biology with input from the public and users of these resources that is then balanced with enforcement practicalities and economic realism. The key word in this statement is balance. Part of that balance is understanding the complexities of annual and seasonal population dynamics, life history traits of almost 1,100 species of wildlife and more than 2,000 plants, and subtle habitat changes that affect all wildlife. On the social and public use spectrum, there is a need to balance conservation with the desires of the public, the requirements for federal funding of conservation programs and the opportunity to harvest fish, forest and wildlife. Conservation decisions must be tempered with common sense, incorporate concerns regarding regulation compliance and consider habitat and even climate changes as well as competing uses for limited resources.

The Department has outstanding employees covering many disciplines that work closely as a team to apply the best conservation science available. Many of the Department staff are respected nationally for their expertise. Conservation

employees have a desire for continuous improvement in their work, a never-ending desire to better understand complex biological and social systems, and a dedication to the public and resources that resembles more of a lifestyle than a career. Communication with the public is done through scientific surveys, stakeholder meetings, focus groups, phone calls, letters and e-mails. These contacts help quantify public desires. As you might imagine, with this number of ideas and suggestions from our conservation public, it is difficult to sometimes see a clear decision path that satisfies everyone’s desires. Balance, once again, is key in the Department’s decision making.

Our Conservation Commission acts on the policy and management recommendations of employees to develop conservation plans and regulations. The intent is to balance the biological needs, social views, public desires and enforcement issues into sound conservation decisions. Conservation science is a complex and dynamic challenge. It requires strong leadership at all levels in the Department, continuous efforts to understand natural systems and the social values surrounding fish, forest and wildlife resources, active citizen involvement and support, provides transparency in our communication on conservation topics. This process helps ensure relevancy of the Department to all Missourians. I am proud to have been a small part of conservation science during my career with the Department.



Ron Dent, resource science division chief

OUR MISSION: *To protect and manage the fish, forest and wildlife resources of the state; to serve the public and facilitate their participation in resource management activities; and to provide opportunity for all citizens to use, enjoy and learn about fish, forest and wildlife resources.*



Cover: Giant swallowtail butterfly
by Noppadol Paothong

Left: Viceroy butterfly by Noppadol Paothong

NextGEN

This section reports on goals established in *The Next Generation of Conservation*. To read more about this plan, visit www.MissouriConservation.org/12843.

4 NEWS & EVENTS

28 PLANTS & ANIMALS

30 PLACES TO GO

MISCELLANY

2 Letters

5 Ombudsman

9 I Am Conservation

32 Hunting and Fishing Calendar

32 Contributors

33 Agent Notes

FEATURES

10 **Street Trees Pay Us Back**

by Bill Graham and Helene Miller, photos by David Stonner

It's as if our urban trees were growing dollar bills instead of leaves.

16 **Catfish Tournaments**

story and photos by Jim Low

A fish of a different color

20 **Shutter Bugs**

by Noppadol Paothong

Stalking tiny wildlife for art and inspiration

SAVING SWANS On behalf of The Trumpeter Swan Society, it is my honor to thank the Department

of Conservation for recommending that restitution funds from the illegal shooting of trumpeter swans be donated to TTSS for swan conservation work. In the past two years there seems to have been an increase in illegal shooting incidents resulting in death or injury to trumpeter swans in the United States.

We commend the Department for suggesting that restitution funds be designated for swan conservation work. Although it is not

unprecedented to allocate fines or restitution funds for wildlife management or research, it is not common. TTSS is a small, nonprofit conservation group, but has members and directors throughout North America. As you may know, the recent economic conditions have had adverse impacts on funding for many charitable organizations, including TTSS. The funds totaling \$5,250 received from a recent case through Boone County Circuit Court have enabled us to maintain some of our programs that would have otherwise been significantly reduced.

One of the newest projects is called "Trumpeter Watch." It is a citizen science project with the objective of improving our knowledge of the distribution and numbers of wintering trumpeters. During this past winter we received a number of swan sightings from Missouri as well as from other southern states. We are in the process of compiling and mapping the results

from our initial winter and hope it will provide state and federal agencies and conservation groups with valuable information that will result in improved understanding of swan migration and wintering for all of us.

Trumpeter swan education and outreach are very important to us. Our membership is diverse, including avid hunters as well as those that choose not to hunt. When hunters take game or nongame animals illegally, it gives all hunters a bad rap. If trumpeter swans continue to increase as they have in the past two decades, more hunters will encounter them during waterfowl seasons. Education and law enforcement are both keys to reducing illegal take during future seasons.

We thank you for the work you do to help conserve wildlife and, specifically, for your assistance in swan conservation.

*John E. Cornely, executive director
The Trumpeter Swan Society*



Reader Photo

COOL WILDLIFE

Marcy Pivin, of St. Charles County, submitted this picture of a turkey vulture that was cooling off on the roof of their house. "A squirrel had met its demise on the road in front of our home," says Pivin. "This vulture flew in about noon and watched the area carefully until about 3 p.m., when he finally claimed his meal." Pivin says that they get lots of wildlife around their home. "We are fortunate to get lots of deer and raccoons and other wildlife, and we have a hawk that lives in one of our pine trees." Pivin says she and her family enjoy driving down Highway 94 to see the scenery and photograph the bluffs, and they also enjoy visiting the August A. Busch Memorial Conservation Area near their home.

EARLY BIRD

Thank you for your wonderful article on wild turkey management in Missouri. [*50 Years of Missouri Turkey*; April].

I live in Creve Coeur, a West County suburb of St. Louis. This morning, while waiting in the van for the school bus, Jacob, my son, pointed to my left. There I saw a young wild turkey sauntering across the street. He passed the van within 12 feet without fear.

Jacob got out and shot him. With his mobile phone video, that is.

Jacob played back the video and, though it wasn't much, we saw the bird and smiled over the moment as father and son enjoying an outdoor adventure.

I told him about your article and how the state turkey management program helped the turkey population grow from a few thousand to over a half-million with gobblers in every county. He was impressed.

Then the bus came.

This morning's experiences were probably the best educational experience today for Jacob.

Again, thank you for writing the article and for your efforts to make Missouri a better place.

Andrew L. Mayer, Creve Coeur



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Let MDC Help You Discover Nature Through a Summer “Staycation”

Looking for ways to save time and money on outdoor-adventure vacations this summer? Let the Missouri Department of Conservation help you discover nature through a “staycation” in Missouri. Birdwatcher, geocacher, hunter, angler, camper, paddler, backpacker, day hiker, cyclist, horseback rider or nature photographer—MDC has something for just about every outdoor enthusiast.

With more than 900 conservation areas, lake and river accesses and natural areas throughout

Missouri, plus 18 nature and visitor centers and more than 80 shooting ranges, the trick is finding the right place.

To help you navigate this dizzying array of opportunities, MDC provides a searchable online Conservation Atlas database at www.MissouriConservation.org/2930. You can even do a “Detailed Search” for conservation areas by available activities from horseback riding to canoeing or goggle-eye fishing.

You can also filter search results by disabled-

accessible offerings, designated trails or shooting ranges.

A search for “boat-in camping along the Missouri River” turns up 17 alternatives, from Atchison County to St. Louis County. Searching for areas where you can bicycle reveals 49 options, from Bollinger County to Buchanan County.

To minimize travel time and expenses, you can narrow such searches to a particular region or county. Regional searches enable staycationers to put together vacation itineraries that let them sleep in their own beds every night.

You also can choose to focus your search on available facilities and services, including visitor centers, picnic areas, pavilions, wildlife viewing blinds, boat rentals or primitive campsites. You might choose to spend your vacation visiting all 18 MDC nature and visitor centers around the state.

Or you might want to focus your search on natural features, such as lakes, ponds, glades, forests, springs or streams. An imaginary itinerary might focus on “walk-in camping” on areas with “springs” in the “Ozark Region.” This search combination turns up five areas: Carter Creek CA in Carter County, Fourche Creek CA in Ripley County, Indian Trail CA in Dent County and Rocky Creek and Sunlands CAs in Shannon County.

Replace “springs” with “designated natural areas,” and the Conservation Atlas directs you to Angeline or Rocky Creek CAs in Shannon County, Little Black, Mudpuppy or Sand Pond CAs in Ripley County or—once again—to Indian Trail or Sunlands CAs.

Changing the search combination to “hiking,” “springs” and “designated trails” gets you 25 choices scattered throughout the St. Louis, Kansas City, Southwest, Ozark and Central Missouri regions.

Boaters and anglers can choose from hundreds of fishing accesses on major lakes and rivers, plus small community lakes. A search for fishing lakes and ponds in the 12-county Kansas City region finds 72 such areas.

With the online Conservation Atlas, you can plan an exciting summer staycation tailor-made for your interests and budget. You might even find yourself taking mini-staycations throughout the year.

Funds for Loggers, Landowners

Loggers and landowners can both benefit from a new Missouri Department of Conservation pilot cost-share incentive program called the Best Management Practices Conservation Innovation Grant. The grant is funded by the Natural Resources Conservation Service. According to Conservation Department Forest Program Supervisor John Tuttle, the grants are focused on encouraging timber harvesters to implement Best Management Practices on private land timber sales in Reynolds, Iron, Shannon, Ripley, Carter and Wayne counties.

The grant is designed to be a partnership

between loggers and landowners as they do business together. If approved, the cost-share would directly pay loggers \$10 to \$20 per acre to implement the BMPs and landowners would receive \$5 per acre.

"The concept behind splitting the incentive is that the logger has the responsibility for establishing erosion prevention measures on timber sales and the equipment to implement the BMPs, and the landowner owns the property and is responsible for maintenance of the BMPs for a reasonable period of time," Tuttle says.

BMPs were developed as a guide for loggers and landowners to combine safe logging prac-

tices with steps that will avoid damage to water quality and soil erosion associated with timber harvesting. By taking steps to learn the BMPs and implement them, the Conservation Department hopes the Conservation Innovation Grant will encourage loggers and landowners to work together in maintaining the best possible forest health and productivity.

To participate, Tuttle says loggers should sign up for the cost share program at their regional Conservation Department office (see Page 3). He says they must be a professional trained logger or attend a BMPs training class with the Conservation Department.



ASK THE OMBUDSMAN

Q: I noticed some odd-looking, purple cardboard devices hanging in several trees. Can you tell me what they are?

A: Those are traps that are placed in trees to help us gather information on an invasive insect called the emerald ash borer. The metallic-green beetle is native to Asia and was first discovered in Missouri (Wayne County) in 2008, making Missouri the ninth of 13 states to report the pest. The beetle's larvae burrow under the bark of ash trees, creating a system of tunnels that eventually cause the trees to die by starvation. The adult beetles are attracted to the purple traps by their color and by attractants that mimic the chemical scent of stressed ash trees. The sticky surface catches the beetles and periodic monitoring of the traps will allow researchers to determine the extent of Missouri's infestation. Traps may be noticed from March through early August in Wayne County and at likely introduction sites around Missouri, such as campgrounds. These pests can hitchhike in firewood, so when traveling, leave firewood at home. For more information, visit: extension.missouri.edu/emeraldashborer/.

Q: What has happened to the whip-poor-wills that I used to hear so frequently when I was younger?



A: There are still whip-poor-wills in Missouri, but the species seems to be declining here as well as over much of its range. Habitat loss and degradation is probably the main reason for the decline. Whip-poor-wills need large blocks of forest with relatively little underbrush. The proliferation of feral and domestic cats with increasing residential development may also be a factor in reducing populations of ground-nesting birds, which include whip-poor-wills.

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 e-mail him at Ombudsman@mdc.mo.gov.

Conservation Hall of Fame

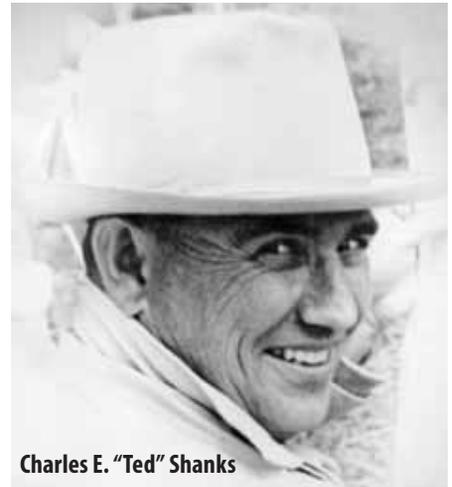
The late Charles E. "Ted" Shanks, a pioneering waterfowl biologist, became the 33rd member of the Missouri Conservation Hall of Fame May 28 at a ceremony in Jefferson City.

Shanks' groundbreaking research guided the development of wetland management techniques and waterfowl hunting procedures for conservation areas. During his 21-year career with the Department, Shanks was instrumental in developing the Schell-Osage Conservation Area and public hunting at Swan Lake National

Wildlife Refuge and Montrose CA.

He served for many years as Missouri's representative to the Mississippi Flyway Council Technical Section, making important contributions to the planning of cooperative research by flyway states. These pioneering studies became the basis for waterfowl management in the flyway. In 1971, the Conservation Commission recognized his efforts by establishing the Charles E. "Ted" Shanks CA.

"Ted Shanks was a dedicated professional whose lifelong commitment was driven by an intense passion for the resource and his desire to



Charles E. "Ted" Shanks

Lake City Range Opening

The Kansas City area has a new facility for hunters and recreational shooters. The Lake City Shooting Range and Outdoor Education Center replaces the old Lake City Range. The new facility is located at 28505 E. Truman Road, just off Highway 7, in William Landahl Park. It is a partnership with Jackson County Parks and Recreation Department. Features include:

- A covered rifle range with 20 shooting booths, target holders at 25, 50, 75 and 100 yards with an observation area.
- A pistol range with 10 booths and 7-, 15- and 25-yard targets.
- Skeet and trap ranges.
- A 12-position archery range has targets from 10 to 60 yards.
- An education center for hunter education and firearms safety training.
- Traps to permit recycling of lead and copper from bullets.

The new Lake City Range is open from noon to 6 p.m. Wednesday through Sunday from May 1 through Sept. 15 and from noon to 4:30 p.m. Wednesday through Sunday from Sept. 16 through April 30. Range fees are \$3 per hour for rifle, pistol, trap, skeet and archery.



share that with the citizens of our state and country," said Conservation Commission Chairman Chip McGeehan in remarks during the induction ceremony. "We honor his memory and achievements."

The Conservation Hall of Fame Program honors deceased citizen conservationists and former employees of MDC and other conservation agencies who made substantial contributions to fisheries, forestry and wildlife conservation efforts in Missouri. Anyone can submit nominations. For further information or to request nomination forms, write to Director, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180.

Applications for Agent Trainees

Some consider it the best job in the world. It's also one of the most demanding. If you think you have what it takes to be a conservation agent, now is the time to try.

The Conservation Department is accepting applications for the next class of conservation agent trainees. The Protection Division will select a handful of candidates from the applicants. These select candidates will undergo 26 weeks of intensive training in all facets of law enforcement and resource management. Those who make the grade will receive county assignments and become the face of conservation in their assigned communities helping the public deal with such issues as fish kills, nuisance wildlife and land management.

To qualify, applicants must have a bachelor's degree in a field related to the natural sciences or criminal justice.

The application deadline is July 23. To apply, visit www.MissouriConservation.org/2129. If you have questions, call 573-751-4115, ext. 3819.

RANGE: DAVID STONNER; TREES: CLIFF WHITE; DEER HUNTER: CLIFF WHITE

Apply for Managed Deer Hunts

Deer hunters have until Aug. 15 to apply online for almost 100 various managed hunts taking place around the state from mid-September through January. Types of hunts include archery, crossbow, muzzleloading, historic methods and modern firearms—plus 12 youth hunts and 10 special hunts for persons with disabilities.

For more information on managed hunt offerings and to apply, go online to www.MissouriConservation.org/7440. With the growth of Internet access through home computers, laptops, smart phones and other technology, most hunters have Internet access—if not at home, then through family, friends, hunting partners or community locations such as public libraries. We encourage hunters to take advantage of these connections to apply for managed hunts.

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.

You can return to the website to see if you have been selected from Sept. 14 through Dec. 31. All successful applicants also 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 after Sept. 14 anywhere permits are sold.



Forest ReLeaf's CommuniTree Garden nursery in St. Louis County will host a special event Sept. 30 to celebrate the distribution of 100,000 free trees.

Tree-Planting Partnership to Celebrate Milestone

The Conservation Department and Forest ReLeaf of Missouri will celebrate the power of conservation partnerships this fall by planting their 100,000th tree together.

Forest ReLeaf was founded in 1993 as the local outgrowth of Global ReLeaf—an international project to increase tree planting. Today, Forest ReLeaf is an independent, not-for-profit organization that provides trees for public and not-for-profit plantings and promotes stewardship of the trees and forests.

The Conservation Department provides seedlings to Forest ReLeaf of Missouri from its George O. White State Forest Nursery near Licking. Forest

ReLeaf pots them, grows them for two to four years and then offers them free for planting on public property each spring and fall.

Forest ReLeaf will host a special event Sept. 30 at its CommuniTree Gardens nursery in St. Louis County to celebrate the distribution of 100,000 free trees throughout Missouri and plant the 100,000th tree.

Forest ReLeaf has worked collaboratively with thousands of Missouri volunteers to grow and distribute trees for plantings in parks, neighborhoods, nonprofits and municipalities. To learn more about the programs sponsored by Forest ReLeaf, visit www.moreleaf.org.

10 Commandments for Camping in Bear Country

When Missourians think of “bear country,” we usually picture Yellowstone National Park or the Great Smoky Mountains. However, Missouri has a growing black bear population, so bear awareness needs to be part of camping close to home, too. Bears are most common south of Interstate 44, where many of the state’s most popular camping spots are located. Campers can avoid bear problems by following these simple rules.

If a bear enters your campsite, shout, wave your arms and use an air horn

or bang pots and pans to make noise. Throw rocks and sticks at the bear. If it does not leave, get in a vehicle and honk the horn. If the bear does not leave, call a conservation agent or local law-enforcement agency.

The Conservation Department wants to know about bear sightings. If you see one, please call 573-882-9880. You can find a bear reporting form at www.MissouriConservation.org/18427. For information about living with bears, visit www.MissouriConservation.org/7835.

1. NEVER FEED BEARS

Feeding breaks down black bears’ natural fear of people.

2. KEEP A CLEAN CAMP

Bears find food scraps and wrappers irresistible.

3. WASH UTENSILS AFTER COOKING

Bears’ keen sense of smell can detect food odors long after cooking is done.

4. START FOOD PREP AT HOME

Peeling and slicing vegetables, cooking meat and doing other food preparation at home reduces bear temptations in camp.

5. STORE FOOD IN AIRTIGHT CONTAINERS

Sealing up food minimizes tantalizing aromas. At night, keep food locked in a vehicle.

6. DON’T COOK OR EAT IN TENTS

With people hidden from view, a bear can mistake a tent for a food source.

7. KEEP GARBAGE SEALED UP

Double-bag refuse and lock it in a car trunk or airtight container.

8. TREAT SCENTED ITEMS LIKE FOOD

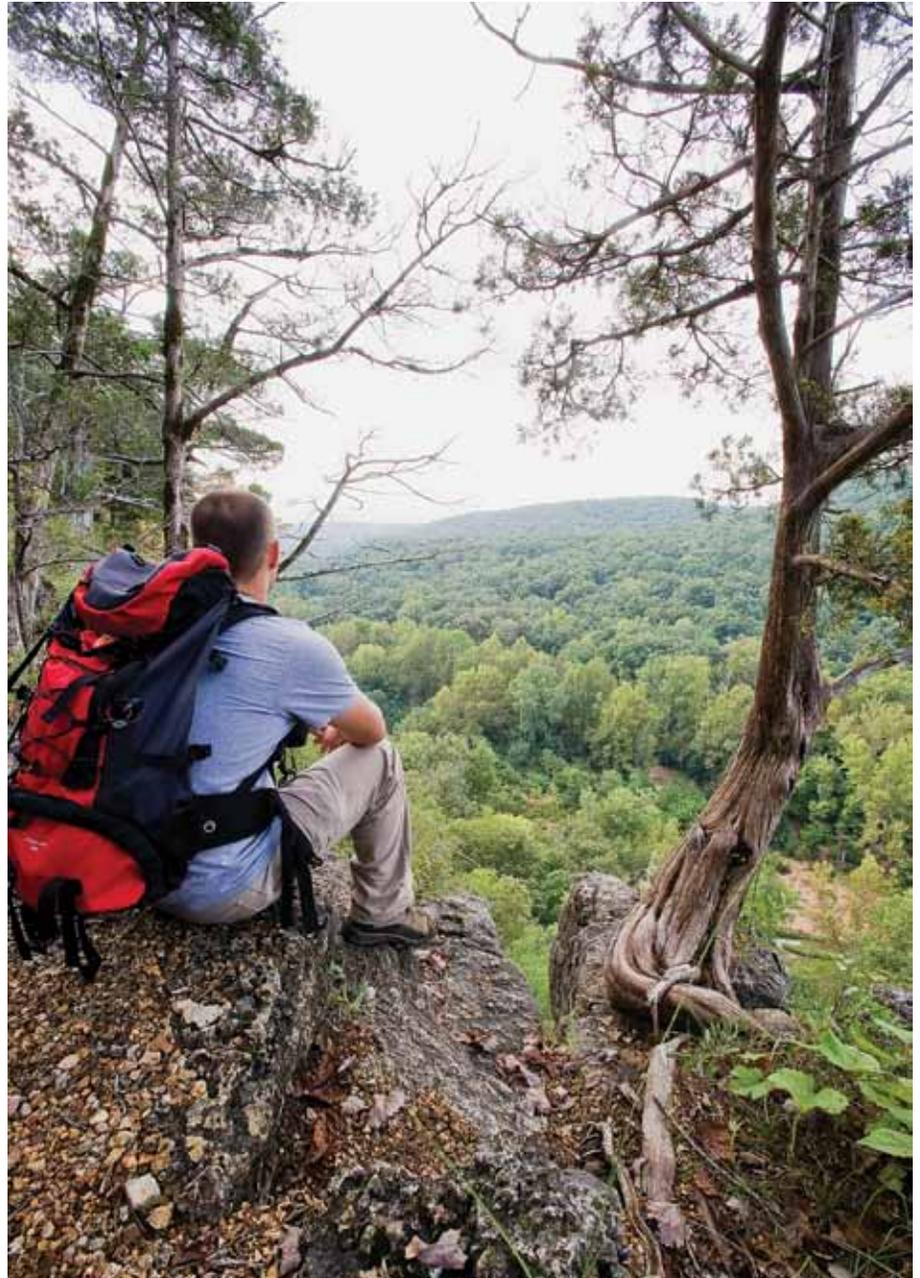
Soap, cosmetics and other scented items smell like food to bears.

9. NEVER APPROACH BEARS

Bears are potentially dangerous wildlife, not movie characters.

10. KEEP DOGS LEASHED

Bears normally flee when they encounter people, but if confronted by dogs they defend themselves.



DAVID STONNER



Building Better Blue Cats at Truman Reservoir and Lake Ozark

In our 2002 Statewide Catfish Angler Survey, nearly 50 percent of respondents who expressed an opinion indicated the quality of catfishing at Truman Reservoir had declined over the past 10 years. MDC staff also documented high harvest and slow growth of blue catfish at Truman Reservoir during our Reservoir Catfish Evaluation Project from 2003 to 2008. Research showed a blue catfish harvest rate 2 to 3 times higher than reported in similar studies nationwide.

In comparison to most other game fish species, catfish (especially blue and flathead) are long-lived and slow growing. It takes a blue catfish in Truman and Lake Ozark about 15 years to reach 31 inches in length and a weight of about 12 pounds. A 15-year-old blue catfish that is 31 inches today can easily live another 10 to 15 years and reach 60 or 80 pounds.

Due to high fishing pressure and angler harvest, the numbers of quality-sized blue catfish in Truman have steadily declined since the mid 1990s.

For slow-growing fish such as blue catfish, once a decline occurs, it takes a significant amount of time (6-7 years) to start reversing the trend and rebuilding the population.

In May, we held a series of stakeholder meetings to discuss potential blue catfish regulation changes for Truman and Lake Ozark. Those in attendance included recreational and tournament anglers, catfishing guides, organized catfish angler groups, bait shop and marina owners, media representatives, judges and prosecuting attorneys, local chambers of commerce, state representatives

and other government and non-government groups such as the Department of Natural Resources, U.S. Army Corps of Engineers and Ameren UE.

The majority of attendees at these stakeholder meetings were in favor of more protective regulations.

The potential regulations could set a daily limit of either five or 10 blue catfish and establish a protected slot length limit. Anglers would be permitted to keep either one or two blue catfish larger than the upper end of the protected slot. The possession limit would be twice the statewide daily limit.

Any regulation changes would apply to Truman Reservoir, Lake Ozark and their tributaries including the no-boating zone below Truman Dam. For the no-boating zone, flathead and channel catfish regulations would revert to the current statewide regulations of five flathead catfish and 10 channel catfish daily. The possession limit would be twice the statewide daily limit.

Because the fishery on Lake Ozark is currently in good shape compared to Truman, improvements in the fishery would occur, but would likely be less noticeable than those predicted on Truman.

For more information about potential blue catfish management changes for Truman Reservoir and Lake Ozark, visit www.MissouriConservation.org/fish/sport/catfish/bluemanage.htm. To comment on changes, please go online www.MissouriConservation.org/contacts and under "Tell us what you think" click on "online comment form."



STREET TREES PAY US BACK

It's as if our urban trees
were growing dollar bills
instead of leaves.

by BILL GRAHAM *and* HELENE MILLER • *photos by* DAVID STONNER



Street trees add value to communities and homeowners.

STATELY STREET TREES give us cool shade in summer, beauty in autumn and good green growth in the spring. They provide green of another kind, too. The same trees lining our urban streets provide millions of dollars in economic value to towns and town-folk. It's as if they were growing dollar bills instead of leaves.

What foresters call "street trees" are just trees that line the street in towns and cities. Most grow between the street and the sidewalk or, where no sidewalk exists, along the road. Most of the trees grow on city-owned easements.

We have long known that street trees were valuable assets, but we could not determine a dollar value for them. Recently, however, a project in the Kansas City area measured street tree benefits in dollars for several cities around the metro area. That's how we now know, for example, that the 415,000 trees growing on city rights-of-way in Kansas City provide an average benefit of \$123 per year per tree, or more than \$51 million annually.

The project, undertaken by the Missouri Department of Conservation, the Mid-America Regional Council and the Kansas Forest Service, uses a USDA Forest Service computer program called i-Tree Streets. The program collects city street tree inventory data and coordinates information on tree species, size, condition and maintenance needs so cities can effectively allocate money to care for their trees.

The value of trees varies from one community to another. For example, economic benefits to cities in the Kansas City region range from \$70 to \$195 per street tree. North Kansas City, a small residential and industrial burg in the heart of the metro area, has 1,800 well-maintained street trees that return about \$345,000 annually to the city in economic benefits. That's an average of about \$190 per tree per year.



The value of trees varies from one community to another. The 415,000 trees growing on city rights-of-way in Kansas City provide an average benefit of \$123 per year per tree, or more than \$51 million annually.



Liberty, a suburban community, has smaller trees, many of which have been storm-damaged, in its historic neighborhoods, but they still average \$70 per tree annually in benefits.

How Do Trees Grow Money?

Shade during summer means cooler temperatures around a home and cooler overall urban temperatures. In a city's heavily developed commercial center, concrete and brick absorb summer heat and create an "urban heat island," making city centers 5 to 15 degrees warmer than the surrounding residential neighborhoods and the rural countryside.

Street trees reduce the heat buildup. They save Kansas City more than \$14.6 million annually in heating and cooling costs for building and home owners, according to the i-Tree Streets study. Even trees devoid of foliage in winter help slow



cold winds and reduce heating costs in cities.

The visual appeal that street trees add makes money for a community, too. Trees lining a street increase property values up to 15 percent, a benefit when selling a home. Higher property values, in turn, boost a community's overall tax base, helping to pay for schools, police and streets.

Businesses benefit because shoppers like trees. Research by Kathleen L. Wolf at the University of Washington has shown that people visiting shopping areas that have trees feel they're buying products with more value. The same product for the same price may be available elsewhere, but shoppers in areas with street trees come more often, stay longer and feel more positive about their purchases.

Some environmental benefits provided by street trees are growing in importance as climate change concerns increase. The release

of carbon into the environment, from power plants for example, has been connected to an increase in greenhouse gases, which are blamed for global warming. Trees absorb carbon and store it. In fact, carbon storage is starting to have an economic value that can be bought and sold for rural forest trees. There is not yet a carbon market for urban forest trees, but it is being discussed. Kansas City's street trees annually store carbon worth about \$1.9 million.

Trees are also standing air filters that work around the clock. Studies estimate that Kansas City's street trees provide more than \$2.3 million per year in air quality benefits.

The foliage on trees also helps reduce stormwater runoff and flash flooding. Rain that falls on trees drips off leaves or runs down the trunk into soil before becoming runoff. Rain that falls onto parking lots speeds straight into storm sewers.

Tree-lined streets encourage people to walk instead of drive. When we do drive, most of us try to park in a shady spot; shaded parked cars pollute the air less than cars parked in the sun on hot days.



Street trees that shade asphalt pavement can save a city up to 60 percent on road maintenance over 30 years, saving taxpayers money.

HELP WITH STREET TREES

The Missouri Department of Conservation knows community tree management is important and pays off in the long run, but it takes some funding, expertise and time to get started. The MDC Tree Resource Improvement and Maintenance cost-share program provides seed money for cities, schools and other units of government to help start tree management programs. MDC foresters have the expertise to help guide communities as they start caring for their trees and reaping all those benefits.

Contact your regional MDC forester for more details (see Page 3).

In Kansas City, street trees intercept almost 606 million gallons of stormwater annually, saving \$16.4 million each year in costs associated with building and maintaining public stormwater systems. That's one reason why the city is including street trees in its "Green Solutions" plan to address stormwater, as well as in its climate protection plan.

The plan calls for planting more than 120,000 street trees over the next 10 to 15 years to fill vacant spots and to have a good urban forestry program to maintain those trees along with existing trees. Trees are now recognized as a critical part of a city's infrastructure and not just nice extras.

Not all economic benefits are reflected in the i-Tree Streets numbers. Some benefits are just now starting to be valued. For instance, street trees that shade asphalt pavement can save a city up to 60 percent on road maintenance over 30 years, saving taxpayers money. The shade helps cool the pavement, and that slows the evaporation of the oils in asphalt, helping the pavement last longer with less maintenance.

Trees as Life Savers

Other tree benefits just can't be calculated. For instance, street trees also increase public safety. Drivers will slow their vehicles down by as much as 15 mph because trees make them feel that the street is narrower, even if it's not, studies show. Trees bring people outside, and that alone helps reduce crime. Making space for trees between a sidewalk and the street also provides a safety zone for children playing on sidewalks and in nearby yards.

Tree-lined streets encourage people to walk or bicycle instead of driving, especially for shorter trips. This can add up to significant savings for gasoline and help reduce air pollution and traffic congestion. As another plus, walking and cycling builds better health and reduces medical costs for individuals and society.

When we do use our cars, most of us try to park in a shady spot on a hot summer day. That reduces air pollution. Shaded parked cars pollute the air less than cars parked in the sun on hot days. All the fluids, including gas and oil, are less likely to evaporate and pollute the air. Some communities in the United States now require developers to provide shade in parking lots.

The i-Tree Streets program has determined that large tree species produce more economic values than small ones. A mature redbud tree with a 10-inch wide trunk will produce annual benefits of about \$46, while a 10-inch Northern red oak produces \$68 in benefits. The red oak's value keeps increasing as it grows. When its trunk is 28 inches wide, for example, the tree produces \$175 in benefits annually. Bur oaks have an even larger canopy, and one with a 28-inch trunk can produce \$286 in benefits per year.

Figuring Tree Value

A calculator for the value of benefits produced annually from trees you may already have is available at www.davey.com/cms/cus/f94711556cbd4c7b/treecalculator.html.

In the Kansas City area, urban foresters have been using a modification of this calculation for the past two years. Instead of annual benefits, they calculate potential lifetime benefits for specific trees. The resulting potential values for more than 130 trees were placed on large price tags and hung on highly visible trees around the Metro area during April, when many of the Arbor Day celebrations take place.

The website on the tag links to the Heartland Tree Alliance, a part of a local, non-profit group, where the many benefits of trees are explained in more detail.

Of course, cities and homeowners never have to pay the price on the tag. The money that is spent on tree maintenance is really very little when compared to the value of the benefits



returned. Planting trees assures Missourians cooler temperatures in summer and wind-breaks in winter. Growing trees will clean the air, store carbon and reduce storm water runoff. They'll also add to property values.

Economic benefits are just one factor in deciding what tree to plant and where. Soil type, available sunlight, moisture conditions and available space are important in selecting trees. Smaller trees with shorter life spans may well be the best match for conditions near overhead utility lines. Some of the land close to the street may be under the control of the city. Check with your city for local regulations. The right tree in the right place benefits people and communities.

With all these benefits, cities and citizens can't afford not to pay attention to their trees. Tree inventory, regular pruning, tree planting, crew training on correct tree care and citizen education are all parts of good city tree management programs. All these programs together cost just a small fraction of the benefits trees return to cities.

You might value street trees in your neighborhood mostly because they're a friendly touch of nature, but don't forget, Missouri's street trees, in dollars saved or earned, are worth billions. ▲

Tags in some trees in the Kansas City area show an actual dollar amount that trees can save people and communities. All people have to do is plant and maintain trees to reap financial benefits as they grow.

RESEARCH & RESOURCES

Find out more about the benefits of trees at:

Natural Environments for Urban Populations
USDA Forest Service's North Central Research Station
www.ncrs.fs.fed.us/4902/

Center for Urban Horticulture
College of Forest Resources
University of Washington Botanic Gardens
www.naturewithin.info/urban.html

Landscape and Human Health Laboratory
University of Illinois at Urbana-Champaign
lhl.illinois.edu

Catfish TOURNAMENTS

A Fish of a Different Color

story and photos by JIM LOW

Everybody knows about fishing tournaments. High-stakes bass contests have been a staple of outdoor television for decades. Contestants streak away from the boat ramp at daybreak and spend the rest of the day plowing frothy furrows across vast reservoirs in search of a few more pounds of *Micropterus salmoides*. At weigh-in time, media throng the podium, and grinning superstars hoist pot-bellied fish from live wells.

Several years ago, I accompanied a hard-driving professional bass angler during a national

championship. More recently, I attended a two-man team catfish tournament on the Missouri River out of Waverly. All things considered, I prefer the catfish event. It was contemplative, with less glitz and more heft. What it lacked in cash it more than made up in cachet. Two fishing-based events could hardly be more different.

Difference No. 1 **BUDDIES, NOT RIVALS**

At big-league bass tournaments, camaraderie is mainly for the cameras. Bass pros are lone wolves. In contrast, my companions for the catfish contest—Larry Dorsch and Tim Hager—have been close friends for more than 20 years. They finish one another's sentences. If one forgets to take his medications, the other reminds him. During dozens of events and hundreds of hours on the water, they have acquired catfishing friends from Missouri to Canada. This far-flung network stays in close touch via mobile phones, pausing during tournaments to share choice bits of gossip with companions up or down river and with others who couldn't make it to the event. Their good-natured ribbing is as funny as it is merciless.



Larry Dorsch (right) and Tim Hager have been friends for many years and have made catfishing friends from Missouri to Canada.





A catfish tournament begins on the Missouri River near Waverly.

Difference No. 2

LIKE DAY & NIGHT

When bass anglers are coming in to weigh their fish, catfishers are just getting started. They hit the water at sunset and return shortly after sunrise. This is because catfish are more active at night. Maybe it explains why catfishing hasn't caught on as a spectator sport. There is no light for pictures, and not many television crews would show up at sunrise for a weigh-in.

Difference No. 3

PACE

Some competitors in catfish tournaments zoom off at the start of the event to stake out their favorite fishing spots. After that, however, things slow way down. Larry and Tim were not in a big hurry to reach their first fishing destination alongside an L-shaped rock dike. They fished the swirling, gurgling mocha water in that spot until almost dark, then took a leisurely ride upstream to anchor above a notched wing dike, where we spent the balance of the night. After they set out the six lines permitted by tournament rules, we settled in and relaxed between bites.

There was lots of time between bites.

The moon was only a crescent on this particular July night, and it didn't rise until 2 a.m. Out on the river, far from city lights, the Milky Way stood out like a brush stroke of phosphorescent paint. We watched the passing bow lights of kayakers training for the upcoming Missouri River 340 race and were serenaded by barred owls, whip-poor-wills and coyotes.

When coffee eventually lost its grip on our consciousness, Tim and Larry took alternating watches to be sure they didn't miss a bite. Apparently impervious to the 52-degree chill and a heavy dewfall, they curled up on the bristly all-weather carpet of the boat's deck.

Catfish Management Pays Off

Unlike many states, Missouri classifies channel, flathead and blue cats as game fish. The Conservation Department banned the commercial take of catfish on the Missouri River in 1992, and anglers reported catching and keeping more catfish in subsequent years. Just a few years after the end of commercial catfishing, sport anglers were catching twice as many flatheads as before. The Department implemented a new catfish management plan in 2004. According to the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation conducted by USFWS, catfish and bullheads accounted for the greatest number of angler days expended in Missouri during 2006, which is the most recent data available.



Difference No. 4

FISH SIZE

The only thing I can figure that keeps catfishers warm under those conditions is dreaming of big fish. Boating a 10-pounder would be cause for wild rejoicing in a bass tournament. A catfish angler won't even look up from his coffee at a fish that size. In 2007, Larry won the big-fish prize in this tournament with a 69-pound, 6-ounce blue cat. The all-time tournament record topped 90 pounds. You can imagine what it takes to win the big money for total catch.

Difference No. 5

GEAR

Anglers in big-bucks bass tournaments sport fancy clothes plastered with sponsor's names. They drive boats worth more than a modest home. Attire and equipment at a Missouri River catfish tournament lean toward dilapidated jeans, Carhartt jackets and aluminum john-boats. You see some fancy rigs, but most are simple decked aluminum jobs. Fast and fancy don't count for



TIM GRACE



Big fish require a hold that is more like cradling the fish. A cradle hold puts less stress on large fish, which means a more successful release.

Some Similarities

Bass and catfish tournaments do have some things in common:

- Like their bass-fishing counterparts, catfish anglers practice catch-and-release fishing. Dead catfish don't count at weigh-in.
- Both groups will go a long way for a tournament. Tim and Larry fish a circuit that extends from their native Nebraska to the Red River in Canada and back to Missouri. The economic stimulus provided by catfish anglers' purchases of food, lodging, fuel, fishing permits and other needs helps keep local economies humming.
- Catfishers are serious about honesty. Like some of the bigger bass tournaments, the Missouri River catfish event I attended had a polygraph at the weigh-in, just in case questions arose about someone's catch.

much on the river. A team in a 16-foot johnboat with a 25-hp motor has about as good a chance of bringing in a winning catch as anyone.

Fishing tackle is a bit more consistent. Big fish call for big gear. Some of the fishing rods resemble extra-long broom handles equipped with industrial winches. Fishing line runs toward 30- and 50-pound-test. Some anglers use steel leaders to make sure a big cat's coarse-grit sandpaper teeth don't wear through the line. Lead sinkers big enough to tether a Shetland pony are needed to hold down bait in the Big Muddy's powerful current.

When it comes to "big," nothing beats catfish anglers' landing nets. I'm talking scoop-up-a-Mini-Cooper big. I swear, some of them were wider than the boats carrying them. If this seems overly optimistic, refer back to Difference No. 4.

Bass anglers like to tack the word "bait" onto the names of their favorite lures—buzz-bait, stick-bait, crank-bait, etc. Catfishers use *real* bait. Stink-, dip- cut- and dough-baits live up to the name, as do liver and various live baits, including worms and sunfish. You would be amazed how seldom serious catfishers feel the need to resort to soap

between handling bait and picking up a bologna sandwich. A quick swish in the river usually suffices.

Difference No. 6 PRIZE MONEY

A professional bass angler can take home \$100,000 from one tournament and pocket upward of \$1 million in residual earnings. When I mentioned prize money to Tim and Larry, they laughed out loud. "If a person fishes for the money, he's going to go broke," says Tim.

Their biggest win was in 2008, when they caught a 40-pounder and claimed \$1,200 for the greatest combined weight. They say they do it for fun, peace and quiet and to get together with old friends. The possibility of catching a huge catfish has a place in the equation, too.

Tim and Larry didn't do too well the night I was with them. Their two flatheads totaling 9 pounds left them way out of the money. But they made a huge haul in the currency of catfish-tournament society—a story about how the tournament boss sank his boat before the event even got underway. In the world of catfish tournaments, that's gold! ▲

Shutter **BUGS**

Stalking tiny wildlife for
art and inspiration

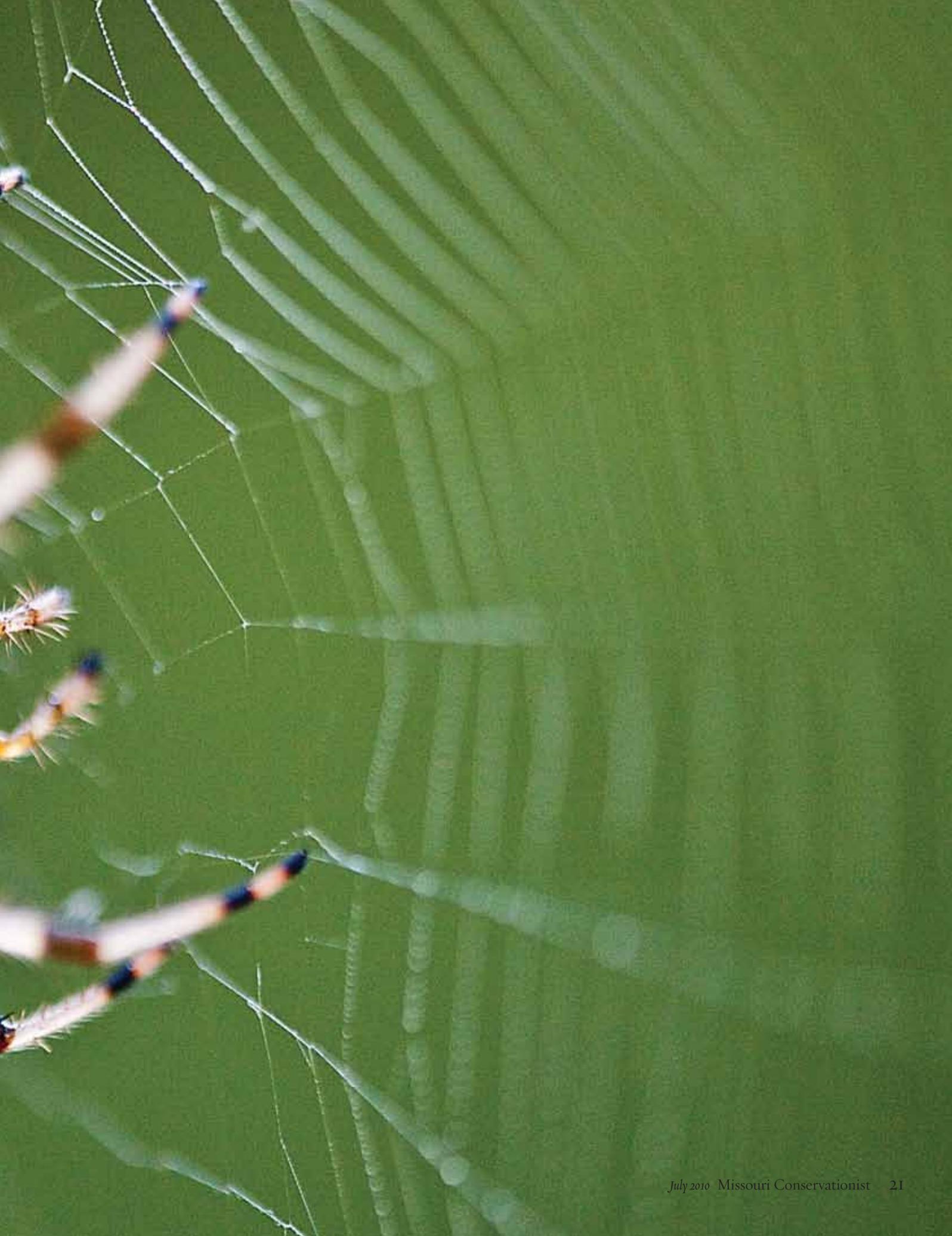
by NOPPADOL PAOTHONG



Marbled Orb Weaver ▼

I found this marbled orb weaver spider cleaning its web while I was hiking at Alley Spring in Eminence in early fall. This spider has an interesting looking marbled pattern on its body. These builders of spiral webs can be found in woodlands and scrubby fields.

📷 180mm f/3.5 lens • f/3.5 • 1/250 sec • ISO 800



When people think of insects, they too often imagine creepy bugs crawling on their legs or scary-looking spiders hiding in the attic. These are creatures with serious public relations problems. However, insects are really interesting if you pay attention. Get to know where they come from, what they eat, how they adapt to the environment and survive their daily lives, and you'll likely be fascinated. For me, they are one of the most interesting life forms in the world.

As a child growing up in a big city, insects were among the first things that made me go outdoors and appreciate nature. Later, they were one of the first subjects I used to practice my photography skills.

Every summer I couldn't wait to get out of the city and spend my vacation at my grandmother's house in the countryside. One cool summer evening, my friend and I were playing a game in the field when a large, emerald-colored beetle caught our eye. I later learned that it was a jewel beetle, or Buprestid. We were fascinated by its beautiful color and weird-looking body parts. It was something I'd never seen before.

After that, I began to explore the beetle's habitat and learned how this species lived and what it ate. My interest in nature grew. When I went outside, I paid closer attention to the world around me—to the sounds, colors and any small creatures crawling about. Sometimes, after a rainy night, my friend and I would light a candle to see what kind of insects we could lure. (Oftentimes we got more than we bargained for, such as mosquitoes.) Out in the tall grass field, we would compete to see who could catch the weirdest-looking bug. Though many years ago, the memory of those times is still vivid in my mind.

I still enjoy watching and photographing insects. It's fun to explore new ways to photograph them. Because they are tiny, a small change of perspective can make a totally different image. When I photograph insects, I often sit low and start searching on the ground level. I move slowly. When I find the one I want to photograph, I try various angles to see what shows the most interesting side. I also use a macro lens, which offers a good close-up. It is usually easier to approach them in early morning. When it is still cool, with morning dew on leaves and grasses, they tend to stay still until they dry out their bodies, and this makes the photography less challenging.

If you have a yard, park or conservation area nearby, you likely have a variety of insects living within the area, and they are easy to find. With time and patience, you can get close enough to photograph them. Also, because insects are not too difficult to approach, they offer unique opportunities for kids to explore nature. Searching for bugs can be a fun individual or family activity. A popular game is trying to find and identify the most unusual insect. This simple outdoor adventure might even create the sort of lasting memory and changed perspective for your family that it did for me. ▲





▲ Wheel Bug

The wheel bug is easy to approach because of its slow movement. I found this bug in a grassy area next to a creek, but it can be easily found in your backyard. You might find them feeding on insects such as caterpillars.

📷 100mm f/16 lens • f/2.8 • 1/20 sec • ISO 800

◀ Annual Cicada

Unlike other cicadas that emerge after several years (some even take 17 years!), it can be seen every year during midsummer. They can easily be found on a tree midmorning.

📷 100mm f/13 lens • f/2.8 • 1/250 sec • ISO 800

Widow Dragonfly ▶

I found this widow skimmer dragonfly in the early morning when the temperature was still cool. Early morning is usually a good time to photograph insects because their wings are covered with dew, so they tend to stay put longer.

📷 180mm f/4 lens • f/3.5 • 1/200 sec • ISO 200



▲ Differential Grasshopper

Differential grasshoppers are a common species of grasshopper in North America. I found this grasshopper while photographing wildflowers in the prairie. I lowered my camera to position the grass in the foreground to make this image more interesting.

📷 100mm f/2.8 lens • f/2.8
1/40 sec • ISO 400

Cicada Killer ▶

The cicada killer wasps are so named because they hunt cicadas. When I found this wasp, it was resting on a grey-headed coneflower, which helped bring contrast to the image.

📷 180mm f/5 lens • f/3.5
1/125 sec • ISO 800





▼ Northern Broken Dash

I captured this northern broken dash while it was feeding on nectar of a purple coneflower in early summer.

📷 100mm f/8 lens • f/2.8 • 1/200 sec • ISO 400



▲ Tarantula

Many people are afraid of the tarantula because of its large size and scary appearance. However, it actually is very shy and likes to avoid people if possible. Like many hunting spiders, tarantulas are active at night when they hunt for insects such as crickets.

📷 180mm f/16 lens • f/3.5 • 1/250 sec • ISO 200

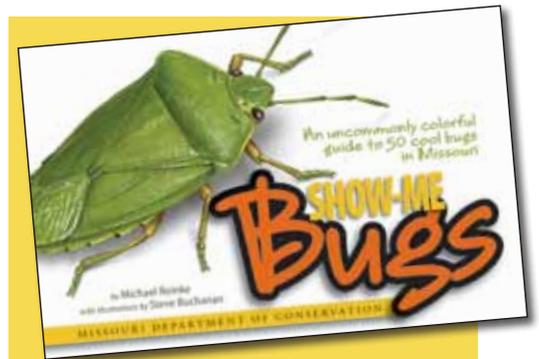




◀ **Great Spangled Fritillary**

A great spangled fritillary is taking a sip of nectar from thistles. I was lucky to get this shot because I was photographing a hummingbird and it landed right in front of me. I quickly positioned myself to get a low angle and captured this insect with the colorful flower while feeding.

📷 180mm f/2 lens • f/3.5 • 1/250 sec • ISO 200



Show-Me Bugs

An uncommonly colorful guide to 50 cool bugs in Missouri

Whether you think they're cool, gross or just plain pesky, insects are among Missouri's most ecologically important wildlife. This eye-popping guide by entomologist Michael Reinke and natural science illustrator Steve Buchanan makes learning about them fun. Designed for use in the field, the book's icons, ruler and habitat, range, food and life-cycle details make species identification easy. Perfect for kids, families, teachers and gardeners. Pick up the 136-page *Show-Me Bugs* at your local conservation nature center. You can also order by phone (toll free) at 877-521-8632, or online at www.mdcNatureShop.com. The price is \$7.95 plus shipping and handling and sales tax (where applicable).

Muskrat

This resourceful, vegetation-loving rodent is a common resident of Missouri's aquatic areas.

HAVE YOU EVER observed a live muskrat close up? Most Missourians would answer “no” to this question. The muskrat, *Ondatra zibethicus*, is nocturnal, for the most part, and downright unsociable around humans when encountered during the day. Once a human is spotted, the muskrat will dive and stay under water as long as 20 minutes to avoid contact. Recently, I was photographing ducks at a lake on August A. Busch Memorial Conservation Area from a well-concealed hunting blind. To my surprise, a muskrat swam to within 20 feet of my location and spent about an hour feeding on aquatic vegetation. I was taken by the appearance of this foot-long, furry rodent; kind of cute at first glance, but a little weird on closer inspection. Muskrats are a golden brown with tiny black eyes, long whiskers and hand-like paws with long, ivory-colored nails. They also have a long, vertically-flattened, hairless tail that aids them in swimming.

Muskrats occur throughout Missouri and their preferred habitat includes wetlands, lakes, ponds, rivers and slow-moving streams. A muskrat's body is suited for swimming with the help of huge hind feet and for burrowing with the aforementioned claws. Long claws help the muskrat to burrow into stream banks and pond dams. They start below the waterline and burrow upward to a point above water where the den is constructed. Muskrats don't always live in underground burrows, but instead construct above ground dens made of cattails and other aquatic vegetation. Muskrat dens are sometimes confused with beaver dens, which are larger and made of sticks and mud. Muskrat dens are usually visible from the shoreline and sometimes you can see muskrats sitting on top of their den, feeding or loafing.

Muskrats raise multiple litters, starting in the spring and continuing into fall. As young develop, they start to venture away from the den to feed on aquatic vegetation, along with their parents. Roots and stems of cattails, water lilies, smartweed and water willow are all on the menu. Muskrats typically spend their life as vegetarians but they occasionally eat other items such as mussels and crayfish, especially if vegetation is scarce. They also will scavenge dead fish but will not expend energy pursuing live ones so muskrats are never a predatory threat to pond or lake fisheries.

Landowners often complain of damage to pond dams from muskrat burrows but muskrats typically don't dig far enough to seriously weaken a properly built dam. For information about muskrat control and ways to prevent muskrats from becoming a problem on your property, check out *Missouri Muskrats: A Guide to Damage Prevention and Control*. You can download a PDF of this publication at www.MissouriConservation.org/250. This publication covers muskrat life history, proper pond and dam construction, damage prevention techniques and trapping methods. Whether you are building a new pond or trying to maintain an old pond, there are proven methods to help you live in harmony with these resourceful rodents.

—story and photo by Danny Brown





Mule Shoe CA

Enjoy summer's outdoor pleasures in this forested Hickory County area along the Little Niangua River.



RENEW YOUR FISHING permit and gear up for a visit to Mule Shoe Conservation Area this month. You'll find a variety of outdoor activities, from floating and fishing to berry picking and wildflower viewing.

Located east of Cross Timbers in Hickory County, Mule Shoe CA includes two parcels totaling 2,476 acres.

The Department purchased the area, which borders the eastern bank of the Little Niangua River for more than a mile, to help protect aquatic habitat for the endangered Niangua darter.

This slender, colorful fish is classified as a state-endangered and federally threatened species. One of the last remaining populations of the Niangua darter survives in the Little Niangua, which provides its required habitat: a clear, clean, continuously flowing stream with silt-free gravel and a rocky bottom.

Fortunately for people, this kind of river habitat is also great for refreshing summer float trips. You'll find a stream access on the area's larger southern parcel.

While you're floating, drop a line in the river for bass, sunfish or suckers. You can also take advantage of the area's 2-acre fishing pond.

In addition to floating and fishing, you can hike the area's several miles of interior access trails. These are open to foot traffic only, which helps protect the Niangua darter's habitat from siltation. Use these trails to visit the area's dolomite glades (rocky, desertlike habitat), which will be abloom with coneflowers and blazing star. Take a bucket for blackberry picking, too. Stop by the fishless ponds, which serve as wildlife watering holes, to catch a glimpse of the many newts that live there.

While you're on the area, you'll notice timber harvesting, which the Department employs to produce more varied wildlife habitat and healthier forest stands. Area managers also use prescribed fire to create a savanna area with scattered, fire-resistant trees and an open, grassy understory. This savanna supports a diverse natural plant community, similar to a native prairie, but unique to the Ozarks and prairie boarder regions of the state.

In addition, many of the bottomland fields are being restored to native bottomland hardwood species to protect streamside corridors and provide additional habitat for streamside wildlife.

As always, visit the area's website (listed below) for the brochure, map and contact information before your trip.

—Bonnie Chasteen, photo by David Stonner

Recreation opportunities: Bird watching, camping, canoeing, fishing, hiking, hunting and trapping in season with special-use permit

Unique features: Aquatic habitat for the state-endangered Niangua darter

For More Information

Call 417-532-7612 or visit www.MissouriConservation.org/a9111.





Hunting and Fishing Calendar

FISHING	OPEN	CLOSE
Black Bass (certain Ozark streams, see the <i>Wildlife Code</i>)	5/22/10	2/28/11
impoundments and other streams year-round		
Bullfrogs and Green Frogs	Sunset	Midnight
	6/30/10	10/31/10
Trout Parks	3/01/10	10/31/10
HUNTING	OPEN	CLOSE
Deer		
Firearms		
Urban	10/08/10	10/11/10
Early Youth	10/30/10	10/31/10
November	11/13/10	11/23/10
Antlerless	11/24/10	12/05/10
Muzzleloader	12/18/10	12/28/10
Late Youth	1/01/11	1/02/11
Archery		
	9/15/10	11/12/10
	11/24/10	1/15/11
Doves	9/01/10	11/09/10
Furbearers	11/15/10	1/31/11
Groundhog	5/10/10	12/15/10
Pheasant		
Youth (North Zone only)	10/30/10	10/31/10
North Zone	11/01/10	1/15/11
Southern Zone	12/01/10	12/12/10
Quail	11/01/10	1/15/11
Youth	10/30/10	10/31/10
Rabbits	10/01/10	2/15/11
Rails (Sora and Virginia)	9/01/10	11/09/10
Squirrels	5/22/10	2/15/11
Turkey		
Fall Firearms	10/01/10	10/31/10
Archery	9/15/10	11/12/10
	11/24/10	1/15/11
Waterfowl	please see the <i>Waterfowl Hunting Digest</i> or see www.MissouriConservation.org/7573	
Wilson's (common) snipe	9/01/10	12/16/10
Woodcock	10/15/10	11/28/10

TRAPPING	OPEN	CLOSE
Beavers and Nutria	11/15/10	3/31/11
Furbearers	11/15/10	1/31/11
Otters and Muskrats	11/15/10	2/20/11

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, the *Fall Deer and Turkey Hunting Regulations and Information*, the *Waterfowl Hunting Digest* and the *Migratory Bird Hunting Digest*. For more information visit www.MissouriConservation.org/8707 or permit vendors.

The Department of Conservation's computerized point-of-sale system allows you to purchase or replace your permits through local vendors or by phone. The toll-free number is 800-392-4115. Allow 10 days for delivery of telephone purchases. To purchase permits online go to www.wildlifelicense.com/mo/.

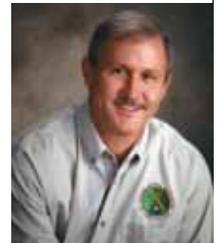


"She finally got over her infatuation with that tape dispenser, and now this!"

Contributors

BILL GRAHAM is a freelance outdoor writer and bluegrass musician who lives with his family in Platte City. A lifelong hunter, angler and naturalist in Missouri, he wrote for 25 years for *The Kansas City Star* newspaper, including a long stint as a natural science reporter.

News Services Coordinator JIM LOW caught his first catfish while prowling the banks of Wears Creek in Jefferson City in the 1950s. Since then, he has focused mainly on smallmouth bass, but he still loves the bulldog fight of whiskerfish. He and his wife, Diane, stay "hooked" on each other by fishing on their anniversary each year.



HELENE MILLER, recently retired urban forester, worked for the Department for more than 30 years and in Kansas City as urban forester since 1996, advising city governments, volunteer groups and homeowners on tree-related issues. She enjoys kayaking, bicycling and working with volunteers to prune city trees.

NOPPADOL PAOTHONG discovered his passion for wildlife photography in college in 1995. Born in Thailand, he came to the U.S. in 1993 to study graphic arts before switching to journalism. When not photographing, he enjoys time at home cooking. He, his wife, Monica, daughter, Evalyn, and their two dogs live in Columbia.



WHAT IS IT?

Three-toed box turtle

On the back cover and right is a three-toed box turtle by Noppadol Paothong. A common, small, terrestrial turtle with a high-domed shell and normally three toes on each hind limb. In Missouri most egg-laying takes place from mid-May to early July. The baby turtles hatch in about three months, but eggs laid late in the summer will not hatch until the following spring. Female box turtles have the ability to store viable sperm and produce fertilized eggs up to four years after mating.



AGENT NOTES

Challenge yourself to be a Master Angler.

MANY FOLKS SEE a nice big bass as the trophy of all trophy fish. I differ. I enjoy catching farm pond bass with friends and family, but more than anything, I love catching big flathead catfish. There is nothing I get a kick out of more than seeing my wife or one of my boys hoisting a big yellow cat over the side of the boat.

The size of a trophy flathead catfish is in the eye of the beholder. The fishing methods used, time of year and size of the fish all come into play. The rod and reel Missouri state record flathead catfish is 77 lbs. 8 oz., and a 94 lbs. 0 oz. giant

is the record taken by other methods. That is a BIG fish either way.

Catching the state record of any type of fish may not be obtainable by many, but recording a trophy fish may be easier than you think.

The Master Angler Award allows fishers the opportunity to obtain an award through the Conservation Department for trophy fish of all different species. The application can be found online at www.MissouriConservation.org/71.

Fish are entered by length or weight. Length requirements are included to promote and accommodate catch-and-release fishing and are intended to be used for released fish. A Master Angler flathead is 39 inches, or 30 pounds. In comparison, a Master Angler bluegill is 10 inches, or 1 pound.

Two years ago, my wife became the Master Angler of our household when she hoisted a 52-pound flathead into our boat. That weight will be hard to beat, but you can be sure I will spend many hours trying. I encourage you to not only go fishing, but to take family and friends with you. Who knows? One of you just may be the next Master Angler.



Vince Crawford is the conservation agent for Caldwell County. If you would like to contact the agent for your county, phone your regional Conservation office listed on Page 3.

WHAT IS IT?

Our photographers have been busy exploring the intricacies of the Missouri outdoors. See if you can guess this month's natural wonder. The answer is revealed on the inside of this back cover.



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