



MISSOURI. Conservationist

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Conserving for the Future

Not long ago, my daughter Kayla followed in my footsteps and graduated from Missouri State University in Springfield. On a recent visit, we compared notes about college experiences and

marveled at how much the community has grown since I started college in 1969. In fact, much of the land on the south side of Springfield has been developed since my college days to accommodate the growth of the city.

Explorer Henry Rowe Schoolcraft traveled the Missouri and Arkansas Ozarks in the winter of 1818–1819, including the Springfield area. Schoolcraft left a journal, and in a Jan. 4, 1819, entry, he wrote:

“The prairies, which commence at the distance of a mile west of this river [James River] are the most rich, extensive and beautiful, of any which I have ever seen west of the Mississippi River. They are covered by a coarse wild grass, which attains so great a height that it completely hides a man on horseback in riding through it.”

In his writings, Schoolcraft also mentioned buffalo, deer and other wildlife where Kayla now lives. It must have been difficult for Schoolcraft and others of his time to imagine the vast expanses of unpopulated land and bountiful wildlife as having a limit. We now know different. Wildlife such as the bison have faded from the Missouri wild, and available land no longer exceeds the desire for people to own it for reasons too numerous to mention.

A demographics study described the Springfield/Branson area as a growth hotspot in the 1990s. The same study also re-

ported a statewide trend for Missourians to relocate from cities and towns to surrounding rural areas. As this trend continues, there will be escalating pressure on Missouri land to continue producing crops/livestock forage (\$5 billion/year industry), forest products (\$4.4 billion/year industry) and hunting/fishing (\$2.4 billion/year industry) along with places for more homes and community expansion. How we use land and incorporate conservation will affect the future vitality of these industries, along with availability of natural resources such as ample/clean water, productive soil and the fish, forest and wildlife resources that



define Missouri’s outdoor heritage.

There are also choices in how land is used and managed. Each acre is part of the whole and, therefore, it seems wise to incorporate as much conservation as practical to ensure future generations also have land-use choices as well as opportunity to enjoy fish, forest, wildlife and other natural resources. It also occurs to me that if conservation is to be achieved, then it will be because people take responsibility to make positive changes “here and now,” rather than leaving the work for someone else to handle “there and then.”

Bill McGuire, private land services 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.*



On the cover and left: Photographer Noppadol Paothong captured these images of black bears for this month's feature article *Be Bear Wise in Missouri? Yes!* To learn more about bears in Missouri, read Dave Hamilton and Rex Martensen's article starting on page 14.

NextGEN

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

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NO RETURN

As a retired medical editor, linguist, and Algonquianist, I read articles and books and just have to comment at times (if you have noticed over the years).

Please see *Missouri*

Conservationist, November 2007 [Page 6], for Jim Low's contribution at bottom about Tywappity Community Lake, where he writes that the "meaning of the name ... is shrouded in mystery." Yes, so many place names are, but this one might have one indeed. In William Bright's *Native American Placenames of the United States*, Norman, Okla., 2004, Univ. of Oklahoma Press, page 526, there is the following entry:

TYEWHOPPEY (Ky., Todd Co.) ... Perhaps from a Shawnee (Algonquian) word meaning 'place of no return' (Rennick 1984). Possibly

related names are Tywappity (Mo., Mississippi Co.) and Zewapeta (Mo., Scott Co.).

I checked my copy of the thin *Shawnee Dictionary*, 1995, but cannot confirm or negate the meaning offered above. Nevertheless I do hope that you put this into the next issue for those avidly interested.

I am also glad to have read *Bridge to the Future* (Page 22), also by Jim Low. You publish so many good articles and ideas over the years, but this one was very informative and of vital interest to many. Thanks.

Carl Masthay, Creve Coeur



Tywappity Community Lake

FUN & SAFETY

I just wanted to take a moment to express my thanks and gratitude for the instructors of the Hunter Safety Course at the Dewey Short Visitor Center [a U.S. Army Corps of Engineers facility at Table Rock Lake]. I enrolled in the course in order to take my 9-year-old grandson hunting during the upcoming youth season. I want him to grow up and know the joys the outdoors can provide and that there is more to life than a "Game Boy" or an "X Box," or whatever they call them.

I'm dating myself, but I am proud to say I carried more than one petition to get the Design for Conservation tax on the ballot for Missourians years ago. I saw the benefits of it then, and I still see the benefits of it today. We have a Department to be very proud of and a lot of dedicated individuals. Please express my thanks to these fellows who take time from their home lives in order to help someone else. It was good to see the number of young folks interested in hunting and conservation.

Dave Rust, Kirbyville

FAITHFUL FRIENDS

A couple of years ago, someone sent a letter to the editor saying how long he had been a subscriber to the *Conservationist* and asking if anyone had been a subscriber longer than he. He started, as I recall, sometime in the '60s or '70s.

I have had an uninterrupted subscription since 1954 ... 53 years. I was 14 years old at the time. I just renewed for another three.

Jerry Risinger, Liberty

Our subscription comes in my father's name because he was the person who introduced me to all of the wonders of the state of Missouri.

Nearly every weekend, our family would go "for a stomp in the woods." We learned about the flowers, trees and wildlife that inhabited the area around Crackerneck Road in Independence. I can still remember swinging on grapevines and walking under tree branches where green snakes would be lying. What wonderful memories of my dad and our trips into the forest. Dad died in 1984 and we get your magazine as a reminder of what he taught us.

Roger Pool, Independence



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Reader Photo

SECOND CHANCES

Mark Beckmeyer photographed this opossum at Reform Conservation Area in Callaway County. Beckmeyer said that he first saw it from a distance. "I meandered back and forth through the trees, occasionally stumbling on rocks and logs, and soon found the little guy quietly rooting through the leaves on the forest floor. I raised my camera and turned it on, [or] at least I would have if the battery was not dead." After returning to his truck for a spare battery, Beckmeyer was miraculously able to find the critter again and captured this great portrait.



Species of Concern **Ozark chinquapin**



Common name: Ozark chinquapin

Scientific names: *Castanea pumila*, variety *ozarkensis*

Range: Southern Missouri

Classification: Imperiled

To learn more about endangered species: www.MissouriConservation.org/8227

THE OZARK CHINQUAPIN is a small- to medium-sized tree with edible nuts that look like spiny sea urchins when still in their hulls. It does best in acid soils on dry upper slopes and ridges. Its name comes from the Algonquin Indian word for chestnut. Like the American chestnut, the Ozark chinquapin fell prey to a fungal disease brought to the United States from Asia in 1904. When the blight reached the Ozarks in the 1960s it virtually wiped out chinquapins. A few survive in extreme south-central and southwest Missouri. They cling precariously to life by sprouting from the roots of trees that formerly stood as much as 60 feet tall. The sprouts eventually become infected with the fungus and die. The Northern Nut Growers Association has put up money to establish orchards aimed at cultivating Ozark chinquapin, and several other groups have launched the Ozark Chinquapin Initiative. For more information, visit www.aes.missouri.edu/swcenter/news/archive/v12n4/swrc5.stm or contact Louise A. “Skip” Mourglia at 417-732-6485, skip.mourglia@usda.gov.

PHOTO: SKIP MOURGLIA; ART: MARK RAITHEL

Coping With Winter

Beating the cold is no sweat for many animals.

How do wild animals cope with winter? Dozens of raccoons pile into den trees to pool warmth. Some salamanders' blood has natural antifreeze that allows them to survive sub-zero temperatures. Ruffed grouse burrow into snow banks at night to escape the cold. The hollow shafts of deer's outer guard hairs insulate them and conduct warming sunlight directly to their skin. Their dense underfur retains heat so well that snow accumulates on their backs without melting.



Hawks on Parade

Sometimes by the thousands!

Hawks are vagabonds in winter, traveling north and south in response to changes in weather and food supplies. Extreme cold or heavy snow in more northerly states can send waves of raptors rippling up and down North America like soaring tides, pushing large numbers of hawks into Missouri. So can cyclic declines in rabbit or squirrel numbers to our north. At times, it seems that every other tree along Missouri highways holds a bird of prey. Red-tailed hawks are most commonly seen, but rough-legged hawks often appear in northern and western Missouri. Fairly large numbers of northern goshawks turn up in forested parts of the Show-Me State in years when Canadian snowshoe hare populations crash.





NextGEN

Wildcat Glades

Enjoy nature throughout winter, indoors or outdoors.

Wildcat Glades Conservation and Audubon Center has something for everyone this month, with both indoor and outdoor programs. Visit a local prairie to see short-eared owls at 3:30 p.m. Jan. 11, or learn about predator hunting at 6:30 p.m. Jan. 21. Deer hunters can express their desires at a public meeting on deer-hunting regulations at 7 p.m. Jan. 9.

Wildcat Glades is located at 201 W. Riviera Drive, Joplin. For more information about these and other programs, contact Kevin Badgley at 417-629-3423, Kevin.Badgley@mdc.mo.gov.



Kayaks and Fleece

Take a winter float on the upper Bourbeuse River.

Winter transforms float streams into austere wonderlands. The upper Bourbeuse River in Gasconade and Franklin counties is a great place for winter float- ing. Canoe access is easy from Mill Rock Access downstream. There usually is enough water for canoeing downstream from Peters Ford. Above that, you need a kayak and still might have to drag it in places. The upper Bourbeuse has good smallmouth, largemouth and spotted bass fishing, with largemouths up to 4 pounds. Jigs with plastic grubs or pork rind work well for bass. Of course, there are rock bass and various sunfish, too. If wildlife watching is your thing, watch for eagles,

minks, deer and turkeys. The water is very cold, even on warm winter days, so wear hip waders to keep your feet dry. For water level information, visit water.usgs.gov/waterwatch/. For canoe rental, call Devil's Back Floats 573-484-3231.

Trail Guide



HAPPY TRAILS IN BUCHANAN COUNTY



NINETY PERCENT OF this 2,344-acre area is covered by forest, with towering sugar maples, black walnut and red oak trees. It also harbors Adam-and-Eve and showy orchids and more than 100 species of wildlife.

Audubon Missouri has designated this as an Important Bird Area. It offers a wide range of outdoor recreation opportunities, from birdwatching to hunting. Wheelchair users will like the handicap-accessible Prairie (.2 mi.) and Meadow (.3 mi.) trails. Adventurous hikers can choose the demanding Maple Falls Trail (1.5 mi.), which traverses steep terrain and crosses several streams. The even more rugged Lone Pines Trail (1.5 mi.) has a bluff-top overlook with a view of the Missouri River flood plain. Another overlook is located on the Turkey Ridge Trail (2 mi.). There is a pavilion, two picnic areas and handicap-accessible privies.

Area name: Bluffwoods CA

Trails: Prairie, Meadow, Bluff, Loess Hills, Lone Pine, Maple Falls & Turkey Ridge—6.7 miles total.

Unique features: Wild orchids, wet-weather waterfalls, lush forest

For more information: Call 816-271-3100 or visit www.MissouriConservation.org/a7403

KAYAKS AND FLEECE: CLIFF WHITE; TRAIL GUIDE: DAVID STONNER



TAKING ACTION

Calvary Cemetery Prairie Restoration



Group featured: Catholic Cemeteries of the Archdiocese of St. Louis, Green Center, Missouri Botanical Garden, Department of Conservation and Nature Conservancy.

Group mission: Preserve and restore the only native tallgrass prairie in the city of St. Louis.

Group location: Calvary Cemetery, located between West Florissant Avenue and Broadway in North St. Louis.

AS THE FINAL resting place of Dred Scott, General William T. Sherman and St. Louis co-founder Auguste Chouteau, Calvary Cemetery paints a vivid picture of the city's human history. As home to St. Louis' only native tallgrass prairie, it provides wonderful opportunities to learn about our state's natural history. Catholic Cemeteries of the Archdiocese of St. Louis, which owns the cemetery, has made a 100-year commitment to preserve the 25-acre prairie for all to enjoy. To meet that goal the church is partnering with the Green Center, Missouri Botanical Garden, Department of Conservation and the Nature Conservancy to conduct a prairie preservation and restoration project. The coalition will remove exotic and invasive species, reestablish native grasses and flowers and create trails to enable residents to experience St. Louis as it was in its natural state. For more information on the restoration project, visit www.thegreencenter.org.

PHOTO: COURTESY OF THE GREEN CENTER; ART: MARK RAITHEL

TreeKeeper Classes

St. Louis-area course teaches community tree care.

Learn how trees benefit us and how to care for trees in your community during the six-week TreeKeeper course at the Wildwood Campus of St. Louis Community College. Classes will be held on Thursdays from 1 to 3 p.m. beginning Feb. 7. Course topics include tree identification, tree planting, pruning, insects and diseases.

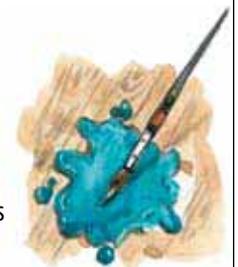


The course is free. However, participants are asked to provide 24 hours of volunteer service after graduation. To register, call 314-984-7777. For more information, call 888-4RELEAF.

"Yes You CAN" Contest

A fun way to teach the value of trashing litter.

Missouri grade school teachers have until Jan. 31 to enter the No MOre Trash! "Yes, you CAN" make Missouri litter free" trash can decorating contest. The contest enables students in kindergarten through eighth grade to help discourage littering by decorating a 30-gallon or larger trash can with artwork, an anti-litter slogan or message and the No MOre Trash! logo. The school submitting the entry selected as best overall will receive an award of \$500. The winning entry in each of the three competition categories (K-2, 3-5 and 6-8) will receive a \$100 cash prize. For entry forms and details on the contest, call 573-522-4115, ext. 3855, e-mail nomoretrash@mdc.mo.gov, or visit www.nomoretrash.org.





NextGEN

Attend Deer Meetings

Don't miss this opportunity to voice your opinion.

Give us your thoughts about our state's deer population and hunting regulations. The Department of Conservation will hold public meetings across the state this month and in February to gather public opinion on a variety of deer issues. The meetings are part of an effort to ensure that the deer management plan continues to keep the deer herd healthy and meets the needs of hunters and landowners. The two-hour meetings will run from 7–9 p.m. at locations listed below.

- **Springfield, Jan. 8**—Bass Pro Shop, 1935 S. Campbell Avenue
- **Joplin, Jan. 9**—Wildcat Glades Audubon Conservation Nature Center
- **St. Joseph, Jan. 10**—MWSU Potter Theater
- **Chillicothe, Jan. 11**—Chillicothe High School
- **Kirkville, Jan. 14**—Days Inn, Highway 63 South
- **Hannibal, Jan. 15**—Quality Inn, 120 Lindsey Drive
- **Union, Jan. 22**—East Central Community College
- **St. Louis, Jan. 23**—Powder Valley Conservation Nature Center
- **Poplar Bluff, Jan. 17**—Three Rivers Community College
- **Perryville, Jan. 24**—Perry Park Center
- **Waynesville, Jan. 28**—Waynesville Middle School
- **West Plains, Feb. 11**—Civic Center
- **Marshall, Feb. 4**—Marshall High School
- **Linn, Feb. 7**—St. George Church
- **Kansas City, Feb. 5**—Burr Oak Woods Conservation Nature Center
- **Sedalia, Feb. 6**—State Fair Community College

For more information about the meetings, call the nearest Conservation Department office, or visit www.MissouriConservation.org/16184.

Hunt Giant Canada Geese

Scout it Out



Location: Clay, Jackson and Ray counties, outside of the Kansas City limits.

For more info: General information on waterfowl hunting is also available online at www.MissouriConservation.org/7559.



JANUARY IS THE perfect time to hunt Canada geese in rural areas just outside Kansas City. During winter, the grass in urban areas goes dormant so the birds must seek high-energy foods such as harvested crops (corn), which are usually found in rural areas.

Good preparation is the key to a successful hunting trip. Scout out a harvested grain field where geese are feeding and secure permission to hunt. Do not hunt on the day you scout; allow the birds to feed undisturbed. Before daylight on the day you hunt, set up a layout blind and goose decoys. Decoys should be placed downwind or crosswind from the blind so birds see the decoys rather than the blind when making their final approach. Warm clothing and a pad allow hunters to remain comfortable while lying in the layout blind waiting for the birds to come to the fields to feed.

The Canada goose hunting season is open through Jan. 30. The bag and possession limits are two and four, respectively. Details on goose hunting regulations are in the 2007–2008 *Waterfowl Hunting Digest* that is available at permit vendors and regional offices (see page 3 for regional office locations and phone numbers), or go to www.MissouriConservation.org/777 to download the pdf.

PHOTO: CLIFF WHITE



Wildlife Autographs

Winter is a great time to get outside to see tracks and signs of elusive animals.

It's exciting to see a bobcat dart across a field or a fox frolic near its den because these sights are rare. Many wild animals live in heavy cover and generally venture out at night to avoid people and predators. There's a fun way to learn about wildlife, even if you don't see the animals. Look for tracks and other signs, such as nibbled plants, scat, digging and feathers.

After a snowfall is one of the best times to trace the movements of wildlife. Look for tracks where two habitats meet, such as the edge of a field and a woodland. The number of toes in a track and the track pattern can help you identify the animal that made the track. Tracks that appear in an almost straight line likely were left by a cat, dog or deer that was walking or trotting. If tracks are in pairs, they probably were made by a member of the weasel family, which includes skunks, minks and otters. If tracks look like hops, they probably were left by a rabbit, mouse or squirrel.

Before venturing out to search for tracks, look at the Animal Autographs page on the Department of Conservation Web site at



www.MissouriConservation.org/16023. It contains sketches of tracks of a variety of animals, tips to help you correctly identify the source of the tracks and instructions for making casts of tracks.

FEATHERED FASCINATION



Great horned owl

FEATHERED: NOPPADOL PAOTHONG; WILDLIFE AUTOGRAPHS: JIM RATHERT

Some Birds Store Food

MANY WHO FEED birds in winter do so to help the animals survive when food is hard to find. Food provided by humans can supplement a bird's winter diet, but it's not the only food source the animals rely upon for survival. Several bird species that live in areas where the seasons change prepare for winter by gathering more food than they need when it's abundant and stockpiling it.

Birds use several storage techniques to keep a food supply on hand. Jays store acorns, seeds, pine cones and other items in the soil, under leaves, other loose litter and in tree crevices. Acorn woodpeckers, which live along the west coast and in the southwestern U.S., store acorns in the shallow holes of dead trees. A group of the woodpeckers can store as many as 50,000 acorns in trees within their territory. Other woodpeckers also store nuts in tree cavities. Some titmice, chickadees, raptors and owls store their animal prey. Generally storage of animal prey is short-term because it decays quickly. Great horned owls are among the birds that use the cold for long-term storage of prey. The owls thaw the frozen prey by incubating it just like they incubate eggs.

Information from *The Birder's Handbook* by Paul R. Ehrlich, David S. Dobkin and Darryl Wheye was used in this segment.

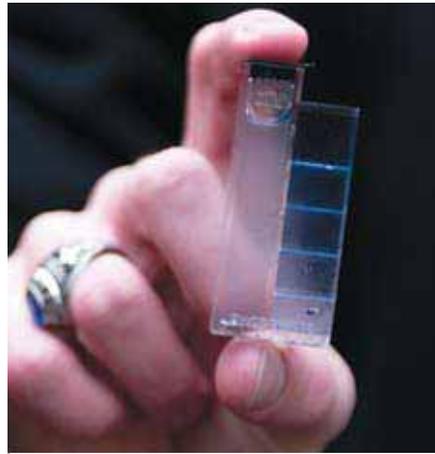


NextGEN

Livestock Fencing

Healthier streams and forests

Letting cattle graze in forests and wade in streams often leads to soil loss, stream bank erosion and reduced stream and forest health. It takes 40 acres of forest to equal the nutritional benefits of one acre of quality pasture. Furthermore, forest grazing can make cattle sick. Running livestock in losing streams also can contaminate groundwater. Fencing that allows limited access to water and shady areas reduces risks, enhances forest vigor and improves water quality. For information about cost-share programs for fencing and alternate watering solutions, contact a private lands or fisheries biologist at a regional office. Phone numbers are listed on Page 3.



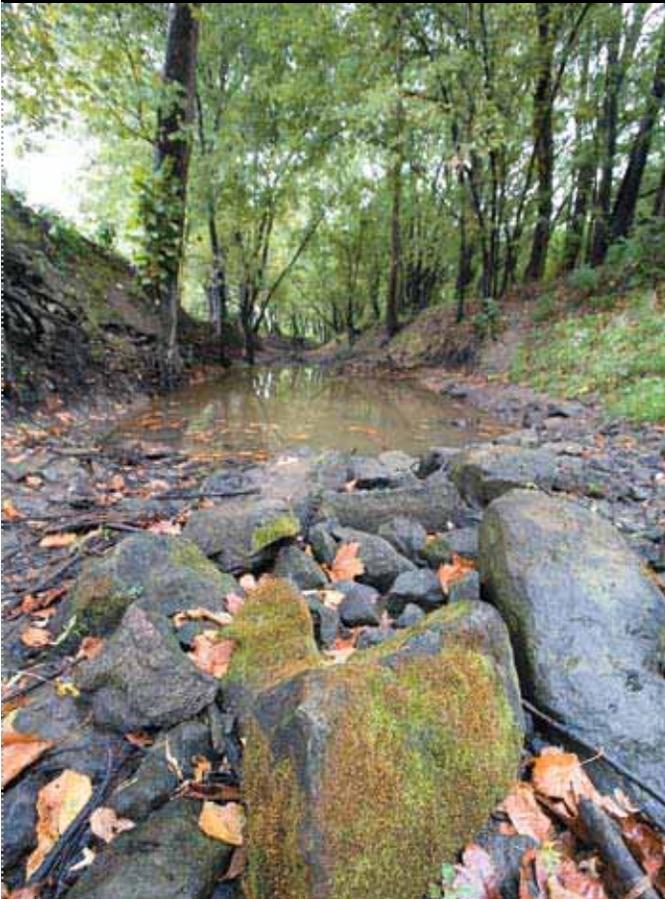
Water Quality Monitoring

Training empowers citizen stewards.

If you have ever wondered if a stream near you is healthy or polluted, the Conservation Department has a way for you to satisfy your curiosity and contribute to the body of scientific knowledge about stream health. Individuals and groups with an interest in stream conservation can participate in the Volunteer Water Quality Monitoring (VWQM) program, a statewide network of thousands of citizen conservationists, some of whom have been submitting data for

more than a decade. They receive training and equipment needed to check stream health. There are four levels of training. Introductory workshops focus on indirect measures of water quality such as visual observations, general watershed evaluation and examining the number and variety of aquatic animals present in a stream. More advanced workshops teach volunteers to conduct direct, technical tests that check for pollutants. Most of the day-long workshops include hands-on field work. Introductory-level workshops are offered in the spring, so now is a good time to sign up. For more information, visit www.mostreamteam.org/vwqm.asp, or call 573-522-4115, ext. 3167.

Stream Team



David Silvey



“I HAVE ALWAYS valued Missouri’s natural resources and want to be a steward for future generations’ sake.”

That is how David Silvey describes the motivation behind his formation of Stream Team 3131. Asked

why he settled on Salt Creek, the New Franklin resident said, “It’s a beautiful and diverse biological location with no current water monitoring activity. It seemed a perfect location to check the quality of water flowing out of that watershed before it enters the Missouri River.”

To achieve that goal, he, Vanessa Melton and Charles Pugsley completed advanced courses in water-quality monitoring. They feed findings from periodic water tests into the Department of Natural Resource’s water quality monitoring database. Silvey said it is gratifying to know the data they collect will provide the basis for detecting and addressing water-quality problems that might arise in and around Davisdale Conservation Area. “This is one way we all give back,” he said.

Stream Team Number: 3131

Date formed: Aug. 12, 2006

Location: Salt Creek

For more info about Stream Teams: www.mostreamteam.org

WATER QUALITY: CLIFF WHITE; STREAM TEAM: DAVID STONNER



Our Glorious Forests

THREE CREEKS CA



Size: 1,500 acres

Location: Boone County, 5 miles south of Columbia on Highway 63, then 3 miles west on Deer Park Road

Highlights: Forest, restored native grassland and karst. Facilities and features include primitive camping, hiking, bicycle/horse trails and three intermittent streams: Turkey, Bass and Bonne Femme creeks.

Find more info: Call 573-884-6861, or visit www.MissouriConservation.org/a8315



UNLESS YOU'RE A scientist, you might not be familiar with the term "karst." This German word from Slovene dialect refers to a limestone region with sinkholes, underground streams and caverns. Karst resembles a big, stiff sponge that soaks up water and any pollutants it carries. What's the best way to conserve karst and its groundwater? Preserve its thick, protective cover—otherwise known as forests and grasslands. A good example of forest-covered karst is Three Creeks Conservation Area. This rugged land features scenic bluffs, intermittent streams, geologic formations and old Eastern red cedar trees. However, when the Department of Conservation purchased Three Creeks, the land showed extensive sheet and gully erosion, the result of decades of logging, grazing and burning. Today public ownership ensures that Three Creeks' forest is managed for watershed health and wildlife benefits, and its karst is protected from development.

We All Live in a Forest

Make the most of your woodlands this winter.

MU Extension's Missouri Woodland Steward program and the annual Missouri Woodland Owners' Conference are designed to help landowners increase both habitat value and income.

The Missouri Woodland Steward program offers three ways to learn about basic forestry and wildlife management. The first is a series of four indoor evening sessions ending with a Saturday "Walk in the Woods." The final field component demonstrates practices introduced in the classroom. Second, a DVD package allows landowners to learn woodland management basics at home. Third, an online format offers something in between the live workshops and the DVDs.

For a current listing of upcoming live sessions, which range in price from \$30 to \$50, visit www.snr.missouri.edu/forestry/extension. Order the DVD set (\$40 plus tax and shipping and handling) from MU Extension at 800-292-0969, or online at www.muextension.missouri.edu. To register for the online version (\$80 and includes the DVD set), visit www.cdiss.missouri.edu and type "Woodland Steward" into the search window.

Register now for the annual Missouri Woodland Owners' Conference slated for Feb. 22–23 in Columbia. This year's topics include an update on state forestry law revisions, carbon credits, how to sell your timber, planning your timber harvest, and CSI: The Forest. Visit www.snr.missouri.edu/forestry/extension, or call Glenda at 573-634-3252.





NextGEN

Learn to Burn Safely

Workshops help you use prescribed fire.

Historically, fire and periodic grazing shaped Missouri's rich grasslands. Today, prescribed fire can improve the diversity and vigor of your grassland habitat and forage base—if it's done safely and correctly. Before you strike the first match, learn how to plan and execute a prescribed fire at a Department of Conservation burn workshop near you. Check with your private land conservationist for workshops in your county or region. You can find your local private land conservationist online at www.MissouriConservation.org/14140.



Instant Wildlife Habitat

Turn your Christmas trees into winter cover.

Winter is tough on birds and small wildlife, especially in areas where cover is scarce. You can help birds and small critters survive by putting your decoration-free Christmas tree out in your backyard or on the back 40. Wildlife will take shelter in its branches and boughs, escaping both cold weather and predators.

When spring comes, change the weathered Christmas tree from wildlife habitat to fish habitat. Weighted with an old cinder block and sunk in your pond, the tree will attract fish, giving you more angling pleasure throughout the year.



Winter is a great time to plan habitat improvements. For more tips on increasing or enhancing wildlife habitat on your rural property, visit us at www.MissouriConservation.org/16063.

CREP pays to set aside sensitive acres.

On the Ground



LAST YEAR CRAWFORD County cattleman Steve Harrison entered 13 acres along the Little Bourbeuse River into the USDA's Conservation Reserve Enhancement Program (CREP). In return for his 15-year commitment, he got cost-share for a new well, watering system and fencing to keep his cattle out of waterways. "Water was a precious commodity last summer," Steve said. "I can afford to give up a few acres for this program to work."

CREP is an offshoot of the Conservation Reserve Program (CRP). By combining CRP resources with state programs, CREP provides a complete cost-share package for conserving natural resources. Steve appreciates the support. "I'm a conservationist, as well as a businessman," he said. "By keeping my livestock out of the creeks, I get healthier cattle and we all get a cleaner environment."

To find out if your land qualifies for CRP, contact your local USDA service center.

PHOTO: DAVID STONNER ART; MARK RAITHEL



We Need Volunteers!

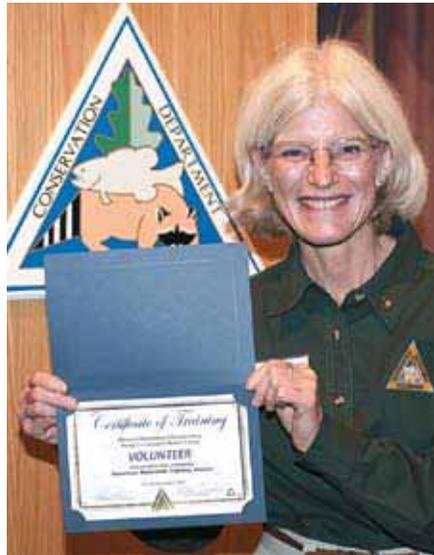
Regions are offering volunteer training in early 2008.

If you love sharing your passion for the outdoors with others, consider volunteering at your local Department of Conservation facility. Several regions are taking applications and offering volunteer training this winter and spring. Call the location nearest you for full details about dates, times and topics.

Burr Oak Woods in the Kansas City region is offering two training programs—one for adults and one for 14- to 19-year-olds. Call Lisa LaCombe at 816-228-3766, ext. 232.

The St. Louis region needs volunteers for a number of positions. Call Angie Weber at 636-300-1953, ext. 224.

The Ozark region is hosting a volunteer training for the new Twin Pines Conservation Education Center; call 573-325-1381 for more information. The Cape Girardeau Conservation Nature Center will hold a volunteer training from Jan. 24 through Feb. 28. Call Steven Juhlin at 573-290-5218.



Naturescaping Workshops

Visit our Web site for the date and place nearest you.

If you want more birds and butterflies in your yard, plant more native plants.

Many native wildlife depend on certain species of native plants during part or all of their life cycle. Also, native plants are adapted to Missouri's soils and climate. Learn how to choose, plant and maintain the right native plants for your landscape at a Naturescaping Workshop this spring. Several nature centers around the state are offering the workshop, and most include a native plant sale. Find dates, locations and full details on our Web site at www.MissouriConservation.org/7910.

NATURE ACTIVITY



VOLUNTEER: CLIFF WHITE; NATURE ACTIVITY: JAMES FASHING

Rockwoods Maple Sugar Festival



FRAGRANT AND DELICIOUS, maple syrup is an original American treat. Learn how to make your own at Rockwoods Reservation's annual Maple Sugar Festival, Saturday, Feb. 23, from 10 a.m. to 2 p.m.

Bring your family and discover how Native Americans and early settlers tapped maple trees, collected sap and boiled it down to syrup. Walk through the woods and learn how to identify maple trees after their leaves have dropped. Collect your own sap, boil your own syrup—and enjoy the sweet taste of success. Please dress for the weather.

There's no charge for the festival and no reservations are required. However, if your school or group (25 to 35 people) can't attend the festival and wants to enjoy the Maple Sugar program, please call 636-458-2236 to make a reservation.

Visit www.MissouriConservation.org/4163 to find conservation events around the state.

Program: Maple Sugar Festival

Where: Rockwoods Reservation, 2751 Glencoe Rd., Wildwood

When: Saturday, Feb. 23, 10 a.m. to 2 p.m. Other dates available for large groups

For more information: 636-458-2236

BE BEAR WISE IN MISSOURI?

YES! Don't let handouts, intentional or otherwise, create a 500-pound menace.

BY DAVE HAMILTON AND REX MARTENSEN
PHOTOS BY NOPPADOL PAOTHONG



You've probably heard it said before... "A fed bear is a dead bear." This is a popular axiom among bear biologists and bear enthusiasts. Feeding bears alters their natural instincts and can create dangerous behavior that often leads to their demise. And just like Yogi in the cartoons we grew up with, bears have a hard time distinguishing handouts from foods that are simply "available."

Bears like the same food that we do. They also like what we feed our pets, livestock, songbirds and squirrels. They are attracted to sweets of any kind, especially fruits and honey, and also enjoy household garbage and grain. Once a bear receives such a "treat" it may return several times even after the food is removed. Some bears become bold when looking for these unnatural food items and may actually cause damage by breaking into containers or buildings.

Pantry Crasher

A couple of summers ago, we were called in to help solve a nuisance bear problem that had suddenly escalated to an unacceptable degree. A southwestern Missouri couple was awakened during the night by strange sounds coming from the kitchen. Something was rustling and banging around, and the wife went to check it out. While making her way to the kitchen in the dark, she tripped over something warm, fuzzy and quite large. The light switch revealed her worst nightmare—a bear lying on the floor!

The bear had simply pushed through the screen door of the house looking for food and helped itself. Because the homeowners had been feeding the bear for some time, they encouraged this highly uncharacteristic behavior. The bear had gotten so accustomed to people, it had just let itself in. It let itself out, too, hurriedly, and through an even larger hole in the screen door.

We learned that the couple had tried to rid themselves of the problem by baiting the bear with dog food that they had placed in the back of a pickup truck. While the bear was busy feeding, the husband tried to

drive off with it. Of course, as soon as the truck started moving, the bear jumped out.

The fate of the home-invading bear was sealed. Because of his altered behavior, this bear had to be eliminated.

Unfortunately, this bear had become what biologists refer to as "habituated." It had lost its natural fear and wariness around people and had begun to associate people with food, becoming seemingly tame. However, bears are large wild animals, and they're strong, unpredictable and never tame.

Black Bears in Missouri

Some Missourians are unaware that we have bears in the state, but we do. Bears were once common throughout most of Missouri. However, settlement of the state brought widespread habitat changes as well as unregulated bear hunting, and it almost wiped them out. By the 1840s, black bears had become rare in north Missouri, and by the 1890s, they were thought to be almost eliminated from the Ozarks. A few bear sightings were recorded into the 1950s, and it was generally believed that some bears might have remained in portions of the Ozarks.

Between 1959 and 1967, the Arkansas Game and Fish Commission released 254 black bears in the Ozark and Ouachita mountains of western Arkansas. Their population now numbers around 3,000 to 3,500 bears, and Arkansas has held annual hunting seasons since 1980. Some of the offspring from the bear population in Arkansas probably wander into Missouri, especially the young males.

Missouri's black bear population is slowly increasing in our Ozarks, and somewhere between 300 and 500 bears are scattered over a wide area of southern Missouri. While we have documented several reproducing females, the population seems to be heavily dominated by young males. If you were to draw a line along Highway I-44 from St. Louis to near Joplin, 90 percent of the bears exist south of that line.

There are roughly 3 million acres of good black bear habitat in Missouri. Although our oak



Bears have a hard time distinguishing handouts from foods that are "available."



Bear Wise — What To Do If You Encounter a Bear

Bears are normally shy of humans and quickly get out of our way when they see us. If you spot a bear on a trail, if a bear is trying to get at food in your yard or campsite, or if a bear tries to approach you, here is how you should react:

- Do not approach the bear to get a better look. Slowly back away while watching the bear and wait for it to leave.
- If you are near a building or car, get inside as a precaution. If the bear was attracted to food or garbage, make sure it is removed after the bear leaves to discourage the bear from returning.
- If you are with others, stay together and act as a group. Make sure that the bear has a clear escape route, then yell and wave your arms to make yourself look bigger. Bang pots and pans—make noise somehow.
- Do not climb a tree—black bears are excellent tree climbers.
- A bear may stand upright to get a better view, make huffing or “popping” sounds, swat or beat the ground with its forepaws or even bluff charge—this means that you are too close. Back off and give the bear more space. If the bear comes within range, use pepper spray if you have it.
- If a bear is in a tree, leave it alone. Remove people and dogs from the area. The bear will usually come down and leave when it feels safe.
- It is important to keep dogs away from a bear. While a well-trained dog may deter a bear, a poorly trained one may only excite it.
- Call the Missouri Department of Conservation—we are prepared to help!

woodlands provide excellent fall foods, primarily acorns, not much would be considered “excellent” habitat due to numerous roads and fairly gentle terrain. Forest clearings and wise logging operations do help improve bear habitat by providing forage and berries in the spring and summer. Insects are also important summer bear foods.

It’s a Bear’s Life

Named after their predominate color phase, black bears may also be brown, tan or cinnamon colored. Sometimes, because of their color variations, black bears are also referred to as cinnamon bears and honey bears. All of the bears in Missouri, regardless of color, are black bears (*Ursus americanus*).

Black bears breed in summer when food is abundant, but don’t give birth until in their dens. Bears typically go to their dens in November and emerge by April. Bear dens can consist of a hole in a rock bluff, a hollow tree, an excavation under an overturned tree, or a brush pile. Bears might also simply hide in the protection of thick, concealing brush. Bears don’t have a true hibernation, but avoid the winter food shortage by becoming lethargic. In the den, they reduce their metabolic rate, surviving without eating, drinking, exercising, or passing waste.

Females may have a litter as early as 3 years of age. After successful breeding, fertilized blastocysts implant in the uterus and undergo a quick 45-day gestation period. Young are tiny, weighing only about 9 ounces, but they grow quickly on rich fatty milk. The female can care for the young even while in a semi-dormant state.

Bear cubs grow rapidly, reaching 60-80 pounds or more by the end of their first summer and fall. They return to den with their mother one more winter before heading out on their own during their second year. After leaving home, young females typically stay close by, but males might wander many miles trying to find areas that do not already have large adult males, but do have food and females. Sometimes these bears can go several hundred miles in their search for new territory.

Getting Along With Bears

Sometimes we fear most those things we understand least. While there are still plenty of things we don’t know about bears in Missouri, we do know we have them, and it looks like more are on the way. With an increasing bear population, the opportunity to see a bear also increases. As a result, many Missourians are encountering bears for the first time and may be unsure how to react.

By nature, black bears are docile and reclusive, and they tend to avoid people. Hunters have reported watching them from their tree stands and, while the bear is aware of the hunter's presence, it merely wanders off without incident. More often, bears retreat quickly when they become aware of human presence, leaving a person to only imagine what might have been crashing through the brush.

We have not experienced a bear attack on a person in Missouri in modern times. However, three bears were killed in Missouri by people last year, and two of those were possibly habituated bears that came too close to people. Black bears are protected by Missouri's *Wildlife Code* and may not be killed without prior permission by an agent of the Department. We are trying to stop the mindset of "shoot first and ask questions later" when it comes to black bears by educating people about bears and resolving their fear of the unknown.

The Department has wildlife damage biologists that are trained and experienced in handling nuisance bear issues. They can usually resolve problems associated with bears without having to kill them or trap and relocate them. We can be most helpful if we are contacted at the first sign of nuisance bear behavior. Don't wait until the bear has

made itself comfortable in your backyard before asking for assistance.

Bears are smart and learn fast. They avoid circumstances that are uncomfortable for them, which is why harassment works well. If a bear is found in your yard, create a racket by making loud noises and shouting, without approaching the bear. A barking dog is also a good and natural deterrent.

Bears are sensitive to electricity, and stringing electric fence around whatever you don't want them getting into is almost 100 percent effective.

Most bear problems can be corrected by removing or keeping food items out of reach and by harassing the bear. If harassment and exclusion tactics don't work, the bear may have to be trapped by a wildlife damage biologist as a last resort.

A Future With Bears

Most folks welcome the chance to see a bear in the wilds of Missouri and, for the most part, those encounters will be positive ones. Learning to live with bears will be important for the bears as well as for Missouri's citizens. By judging from Missouri's proud conservation past when it comes to our native wildlife, I'd say we're up for the challenge. ▲

In Memory of Dave Hamilton (1955 - 2007)

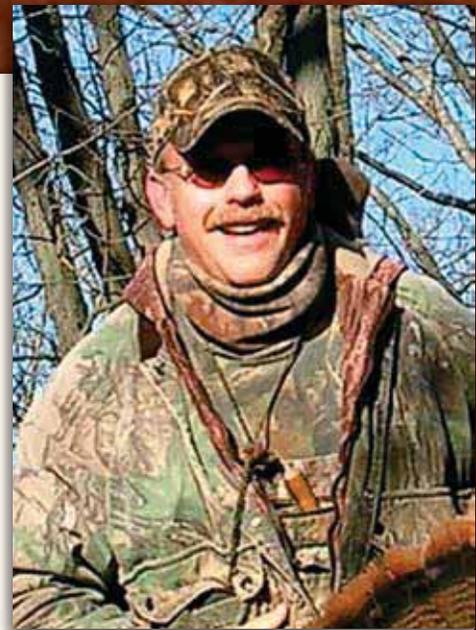
Dave Hamilton, respected resource scientist for the Missouri Department of Conservation, and a great friend and advisor, died on September 8, 2007, at age 52.

Dave was a consummate wildlife professional, a deeply committed biologist and an outstanding researcher. His unwavering devotion to resource management and his national and international status as an expert in the field of furbearer management and humane trapping methods are a credit to him, the MDC, and the conservation of wildlife resources in Missouri.

Dave was dedicated to natural resource management and to the prospect of leaving a better world for those who followed in his footsteps. By virtue of his commitment to scientific excellence and to the wise use of abundant natural resources, trappers, hunters, and wildlife managers throughout the United States have a more secure future.

Throughout his career and personal life, Dave influenced many people with his optimism, innovative approaches, boundless energy, courteous demeanor, attention to detail, professionalism and personal concern for the well-being of Missouri and its resources. He mentored many young professionals and set an example that influenced a generation.

Beyond his professional accomplishments, Dave was valued as a friend and colleague. There is no person that spent any time with Dave who was not impacted by his talent, charisma and dedication. He will be sorely missed by the entire conservation community, and our thoughts and prayers are with Dave's family and friends.



A.M.S.

AQUATIC NUISANCE SPECIES

**SOMEWHERE IN
MISSOURI STALKS
A CREATURE THAT IS...**





DIRECTED BY
Brian Canaday

AND
Mike Kruse

SPECIAL VISUAL EFFECTS
David Besenger

NOT OF THIS STATE

M

issouri is a watery wonderland. We have 17 large reservoirs, totaling more than 250,000 surface acres, and about 500,000 smaller public and private lakes and ponds. In addition, approximately 17,000 miles of permanent streams and rivers and another 39,000 miles of intermittent headwater streams flow through the state.

Nonnative nuisance species pose a grave threat to these important water resources. These species arrive by migrating through open river systems or by being accidentally or intentionally released into public or private waters.

Aquatic nuisance species are defined as nonnative species that threaten the diversity or abundance of native aquatic species, the ecological stability of infected waters, or the commercial, agricultural, aquacultural or recreational activities dependent on such waters.

Even aquatic species that are native to Missouri can become aquatic nuisance species when they are moved into drainages where they do not normally live. Such “inter-basin transfers” can be just as damaging to native ecosystems as introductions of species from other continents.

Because invasive aquatic species threaten our water

resources and the public recreation they offer, we have to divert large amounts of research and management funds to their prevention and control.

Controlling Aquatic Nuisance Species

People who fish in Missouri spend more than \$1 billion a year on their sport. Aquatic nuisance species directly threaten this and other vital economic activity. The Missouri Department of Conservation is doing all it can to protect our state’s aquatic ecosystems and the benefits they provide.

We have identified 12 aquatic nuisance species in Missouri waters and eight more that might arrive in the near future. (See “Current and Potential Threats.”)

The Department’s efforts to prevent, control and mitigate the effects of aquatic nuisance species in Missouri are detailed in the Aquatic Nuisance Species Management Plan (visit www.MissouriConservation.org/8418 to view the plan online). The plan is designed to address invasions at several different stages.

First of all, the plan calls for identifying and implementing all possible actions necessary to stop the introduction of new aquatic nuisance species from any area outside Missouri. It also develops methods to detect and to stop the spread of nuisance species into new aquatic habitats within Missouri.

In cases where introductions of aquatic nuisance species have already occurred, the plan calls for minimizing the effects of these species on native biological communities, as well as reducing any socioeconomic and public health impacts that might arise.

EVEN AQUATIC SPECIES THAT ARE NATIVE TO MISSOURI CAN BECOME AQUATIC NUISANCE SPECIES WHEN THEY ARE MOVED INTO DRAINAGES WHERE THEY DO NOT NORMALLY LIVE.



Ringed crayfish

JIM RATHERT



Potential Viral Invader

Like plant and animal invaders, invading viruses can cause problems for many of Missouri’s aquatic species. Department biologists are keeping an eye on viral hemorrhagic septicemia (VHS), a highly contagious viral disease of fresh and saltwater fish that has caused several large fish kills in the United States. The virus is most active in cold water, which is why most mortality events associated with the virus usually occur in the spring or fall.

VHS is not a human pathogen. There is no known danger to human health associated with this virus, even if people eat fish with the virus. However, we recommend that people thoroughly cook all fish as a precaution.

Fortunately, VHS has not yet been found in Missouri. However, a particularly virulent strain of VHS has reached the Great Lakes region. How it got there is unknown, and each year the range of this virus continues to expand. In 2007, three inland lakes, one each in Wisconsin, Michigan and New York, had kills due to the virus.

Because the virus is so deadly to fish populations, the USDA has implemented a quarantine of numerous fish species from Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin and the Canadian provinces of Quebec and Ontario.

BE A RESPONSIBLE AQUATIC PET OWNER

Department biologists often see the direct result of someone acquiring an animal for their home aquarium or pond without committing to its lifelong care. Large goldfish, koi or even tropical fish occasionally show up in fish population samples or are reported by the public.

The Department sometimes receives calls from pet owners with aquatic animals that have grown too big, or have become too aggressive or just inconvenient, to own. Releasing unwanted animals into local waters often causes harm to many other animals. That’s why the *Wildlife Code* prohibits it.

It’s likely that these released animals, which usually come from countries with warm climates, will shortly succumb to the cold or be eaten by native animals. However, even if they don’t survive Missouri winters, they still might expose native aquatic life to pathogens after their release.

Before acquiring an aquatic pet, research the animal and its needs completely and commit to providing proper space and care throughout its life. Releasing it into the wild is not the answer.

— Andrew Branson

CURRENT AND POTENTIAL THREATS

For more information about aquatic nuisance species go to www.protectyourwaters.net. For information about all invasive species, go to www.MissouriConservation.org/8228. The following aquatic nuisance species have already been found in Missouri.

- Eurasian watermilfoil
- Dotted duckweed
- Daphnia lumholtzi
- Asian clam
- Bighead carp
- White perch
- Purple loosestrife
- Brittle naiad
- Quagga mussel
- Common carp
- Silver carp
- Zebra mussel

Biologists are concerned that the following nonnative species could become established in Missouri.

- Water hyacinth
- New Zealand mudsnail
- Northern snakehead
- Eurasian ruffe
- Hydrilla
- Rusty crayfish
- Black carp
- Round goby



Zebra mussels

MICHIGAN SEA GRANT ARCHIVES



Eurasian ruffe

MICHIGAN SEA GRANT ARCHIVES



Eurasian watermilfoil

MICHIGAN SEA GRANT ARCHIVES



Northern snakehead

U.S. FISH AND WILDLIFE SERVICE



White perch

U.S. EPA GREAT LAKES NATIONAL PROGRAM



Round goby

MICHIGAN SEA GRANT ARCHIVES

Missouri game species susceptible to VHS include bass, catfish, crappie, bluegill, rock bass, walleye, muskellunge and trout. Gizzard shad and many other species that game fish prey upon also are vulnerable.

Help Stop the Invasion

You can play a critical role in preventing the spread of fish diseases and other aquatic nuisance species in Missouri by following a few simple steps:

- Inspect your boat and trailer thoroughly, and remove any trash, mussels or aquatic weeds before leaving any water body.
- Drain all water from the motor, live-well, bilge and transom wells, and any other water from your boat and equipment before leaving any water body.
- Rinse your boat, trailer and equipment, including live-wells, bilge, and cooling systems, thoroughly with hard

**YOU CAN PLAY A
CRITICAL ROLE IN
PREVENTING THE
SPREAD OF FISH
DISEASES AND OTHER
AQUATIC NUISANCE
SPECIES IN MISSOURI**

spray from a garden hose, and allow to dry for at least 48 hours. If your boat or equipment was used in zebra mussel-infested waters, use hot (at least 104 degrees) water, like that found at a do-it-yourself carwash.

- Take special care to clean fishing equipment when fishing known locations of VHS. A light bleach solution (1 cup for 10 gallons of water) is an excellent disinfectant for cleaning equipment.

- Dump leftover bait in the trash or on land, well away from the water. Other options are to take your bait home to use on a future fishing trip, or you might offer it to another angler at the lake or stream to use. It is illegal to dump bait into Missouri waters.

- Laws also prohibit releasing aquatic creatures that have been held captive in private aquaria or ponds. Give your aquarium pets to a friend or to your school, or contact your local pet store or local hobby aquarium society (www.missouriaquariumsociety.org) for help in dealing with unwanted captive aquatic animals.

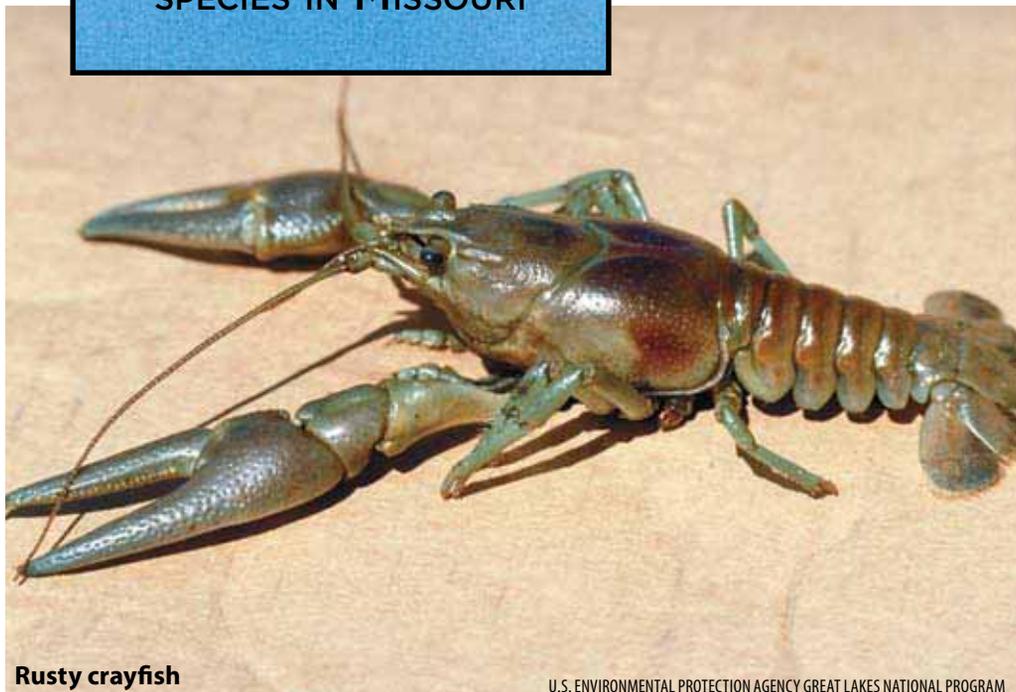
- Do not move fish or fish parts from one body of water to another.

- Report unusual numbers of dead or dying fish to your local Missouri Department of Conservation office. (Regional office numbers are listed on Page 3.)

- Encourage other anglers and boaters to take measures to prevent the spread of fish diseases and other aquatic nuisance species.

- Several Missouri Stream Teams are helping by monitoring lakes and streams for aquatic nuisance species. If you would like to join the effort, call 800-781-1989 or visit the Stream Team Web site at www.mostreamteam.org.

We can maintain the high quality of our water resources and their fisheries if Missourians work together to prevent the introduction and spread of nuisance aquatic species. The Conservation Department's ANS Management Plan details a solid defense against invading species, but the success of the plan requires people to appreciate the value of our water resources and to do what they can to keep them invasive-free. ▲



Rusty crayfish

U.S. ENVIRONMENTAL PROTECTION AGENCY GREAT LAKES NATIONAL PROGRAM



TIM SMITH

Common horsetail



Horsetails

Then and Now

The plants we see today are related to those that lived here before the time of dinosaurs.

by Tim Smith

AROUND 300 MILLION YEARS AGO, Missouri was a warm, wet land covered by shallow seas and swamps. The marine animal fossils we find today in our limestone rock formations are testimony to that long ago environment. Amphibians and insects were abundant. Early reptiles also roamed the land, but the dinosaurs wouldn't rule the earth for millions of years to come.

One of the dominant plants then was a primitive-looking tree that reached a height of 60 feet, with a trunk that was up to a foot in diameter. Future scientists studying the fossil record would give this tree the name of giant horsetail. They called it that because its fossils resembled a giant version of the horsetails we have today.

Although most of the giant horsetails would not survive the Carboniferous Period, these much smaller relatives did survive the intervening millennia and now are common plants in Missouri.

Horsetails were thought to belong to a group called “fern allies,” plants related to ferns. Recent studies, however, indicate that horsetails are actually primitive ferns.

Like other ferns, they reproduce by spores rather than seeds. Spores of horsetails are near-microscopic, single cells that are capable of reproducing plants the size of a pinhead, with just half a set of chromosomes. These tiny plants then produce sex cells that unite to form plants with full sets of chromosomes that we recognize as horsetails.

Horsetail spores are unusual in that each green spore contains four wing-like structures called elaters. When moist, the elaters coil around the main body of the spore. When dry, the elaters uncoil and help the spore to catch the wind for transport. This characteristic increases the chances that the spores come to rest in moist sites that are suitable for growth. The distinctive winged spores of horsetails are short-lived compared to spores of most ferns, but wind currents can transport them long distances.

The stems of horsetails are usually

green and hollow and may or may not be branched, depending on the species. Photosynthesis takes place primarily in the stem, as the leaves are merely small, black or green teeth that occur in rings at each joint of the stem.

Three Missouri Horsetails

Missouri is home to three species of horsetail. The most familiar species, common scouring rush (*Equisetum hyemale*), grows in dense colonies along streams and rivers, at margins of ponds, in roadside ditches and on railroad rights-of-way. It is most



Calamites Fossils

Calamites is the name given to the giant horsetails of the Carboniferous Period. Their stems were hollow and, when they fell or broke, sediments accumulated in the tubes. When these casts later hardened into rock, they became fossils of the inside of the giant horsetail stems. The ribbed and jointed pattern on Calamites fossils is similar to the stem pattern of our common scouring rush, only on a larger scale.

The fossils can be found in various locations around Missouri, usually occurring in coal, claystone, shale, siltstone and sandstone of Pennsylvanian-age strata.



A.C. SPRENG FROM THE UNIVERSITY OF MISSOURI-ROLLA MADE THESE SPECIMENS AVAILABLE FOR PHOTOGRAPHY BY P.S. MULVANY FROM THE MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF GEOLOGY AND LAND SURVEY.

prolific in sandy soils with plenty of available moisture, in full sun to moderate shade.

Its jointed, hollow stems are dark green and remain that color throughout the winter. The stems are rich in silica, which led to their use in cleaning pots and pans during colonial times. That accounts for the plant's common name of "scouring rush."

The rustling of the stems, when someone walks through a colony, produces a swishing sound similar to sheets of fine sandpaper being rubbed together.

When producing spores, the stems are capped by a yellowish, cone-shaped "strobilus," which comes from the Greek word for pine cone. The strobilus has an outer surface of densely arranged hexagonal plates that spread apart when mature, allowing the spores to waft away like fine dust. The finely ridged and jointed stems typically grow 3 to 5 feet tall.

Smooth scouring rush (*Equisetum*



NOPPADOL PAOTHONG

Common scouring rush (above and right) have hollow stems that remain dark green throughout the winter.

laevigatum) closely resembles common scouring rush, but its stems are smooth and they usually only persist for one growing season. There are other minor differences between the two species, and hybrids with intermediate characteristics do occur. Smooth scouring rush is less common than common scouring rush and usually grows in drier habitats, such as in the loess hill prairies of northwest Missouri.

Common horsetail or field horsetail (*Equisetum arvense*) has a strikingly different appearance from the two scouring rushes. It has two types of stems: a spore-producing one that is only briefly present in the spring and a sterile stem that is up and green throughout the growing season.

Its sterile stems, up to 2 feet tall, are shorter than the stems of scouring rushes. Their upper portion contains a series of slender, whorled branches resembling a miniature version of the giant horsetails of the past. The pale-colored, spore-producing stems are unbranched, have no chlorophyll and wither about the time that the green stems appear.



NOPPADOL PAOTHONG



DOV KURZ

Common horsetail with spore-producing stems appear only briefly in the spring.

Common horsetail grows nearly throughout the state, usually along stream and river banks and other areas of moist or wet soil, but it is more common in northern Missouri.

Considering all the changes that the earth has undergone since their giant ancestors grew here, it's a wonder that we have horsetails in Missouri today. It is somehow comforting to realize that this group of plants is still thriving despite millions of years of land-scaping upheavals and alterations. ▲



Annual Report

FISCAL YEAR 2006-2007

MISSOURI
DEPARTMENT of
CONSERVATION

This summary of the Annual Report highlights the Conservation Department's accomplishments and expenditures from July 1, 2006, through June 30, 2007. These accomplishments are based on the nine goals established in The Next Generation of Conservation.



PLANTS & ANIMALS

Natural communities

We are emphasizing the restoration and management of productive natural communities. We actively managed habitat on 21,752 acres of grassland/prairie, 41,259 acres of marsh/wetlands, 580 acres of glades, 45,000 acres of forest, 9,250 acres of savannas and 15,977 acres of old field.

Conserving all wildlife

MDC is leading the implementation of the Missouri Comprehensive Wildlife Strategy (CWS). CWS is a way of approaching conservation planning and implementation that integrates projects and initiatives with conservation partners, other agencies and private landowners. Grants and new money totaled at least \$5 million during FY07.

Invasive species

MDC worked with state, federal and non-governmental organization partners to complete and implement invasive species work plans. Staff completed the Missouri Aquatic

Nuisance Species Management Plan and drafted the Missouri Emerald Ash Borer Action Plan and the Emerald Ash Borer "frequently asked questions."

CLEAN WATER

Stream Stewardship Trust Fund

The Stream Stewardship Trust Fund is available to restore, enhance and/or protect stream systems and associated riparian habitats. The program and funds are administered by the Missouri Conservation Heritage Foundation, and MDC staff apply for grants. In FY07, nine projects costing \$690,000 were approved to protect 70.1 acres of stream channel and 276 acres of riparian corridor.

Taum Sauk restoration

MDC is working cooperatively with several agencies to restore forest, fish and wildlife resources affected by the collapse of the Upper Taum Sauk Dam. Efforts focused on construction of a new stream channel through Johnson's Shut-Ins State Park, removal of clay and silt from Lower Taum

Sauk Reservoir and the East Fork of the Black River, and flow releases from the lower reservoir. We also sampled habitat, fish, insects and other invertebrates to help evaluate effects on aquatic life and habitat.

Improving aquatic resources at Bagnell Dam

MDC joined other resource agencies and AmerenUE in efforts to determine how to design, construct and install a fish barrier net in front of the turbines of Bagnell Dam. There also have been collaborative efforts regarding water-quality enhancement measures to be taken within the operation of Bagnell Dam. Water quality and habitat improvements will be provided for the 82 miles of the Osage River below Bagnell Dam.

HEALTHY FORESTS

Measuring timber usage

To determine the usage of timber from Missouri's forests, MDC foresters visited every sawmill, post mill, chip mill, pole mill and charcoal plant in Missouri. Determining the sustainability of Missouri's forest and calculating the economic impact of Missouri's forest products industry are just a couple of the potential applications of the information obtained.

Oak mast production surveyed

Oak mast is an important source of fall and winter food for many species of wildlife. The oak mast survey is conducted annually to provide an index for the availability of oak mast, giving an indication of what is in store for mast-dependent forest wildlife during fall and winter. In 2007 we sampled 3,847 oak trees. Mast production was poor this year, particularly in white oaks, which was attributed to the late-spring freeze.

Professional Timber Harvesters Program

The Missouri Forest Products Association and MDC jointly sponsor logger training courses aimed at educating loggers about forest management principles, introducing new techniques and concepts, and enhancing the safety of timber-harvesting operations. More than 250 loggers have been through the program.

OUTDOOR RECREATION

Deer Hunting

MDC has expanded opportunities for deer hunters. Unlimited antlerless deer permits for many counties, no-cost any-deer and antlerless deer permits for resident landowners, the Managed Deer Hunt Program, and additional urban deer harvest opportunities help maintain deer populations at herd levels desired by landowners and hunters.

Increased trout-fishing opportunity

The winter catch-and-release season at Bennett Spring, Montauk and Roaring River state parks was expanded from three days to four days per week. In addition, a new winter trout area was established at Spur Pond in Kirksville. Acquisition of the Bohigian Conservation Area provided new public access to 1.26 miles of the Mill Creek Blue Ribbon Trout Area.

Missouri Archery in the Schools Program

MDC, with the Conservation Federation of Missouri, became the Missouri coordinating agency for the National Archery in the Schools Program. The program is designed to teach target archery in fourth- to 12th-grade physical-education classes.

New hunters and anglers

Staff and volunteers provided more than 700 instructional programs in hunting, fishing, trapping and shooting sports to more than 45,000 people. We offered more than 1,000 Hunter Education classes to 29,000 students.

CONSERVATION EDUCATION

Wildland fire-suppression training

MDC trained more than 565 local firefighters in fire behavior, suppression techniques and safety at no cost to the fire departments or the volunteers. We also provided instructors and logistical support for the Midwest Wildfire Training Academy.

Learning Outdoors School Program

In this pilot year, 33 middle schools with 2,431 students received grants to participate in the Learning Outdoors School Program. We also provided an additional 318 schools with conservation grants for outdoor classrooms, equipment and busing costs for field trips. Grants to schools exceeded \$185,000.

Citizens discover, use and enjoy Missouri's outdoors

More than 1 million visitors experienced our conservation nature centers and shooting-range/outdoor-education centers. These facilities offered a wide variety of programs, with more than 300,000 participants.

COMMUNITY CONSERVATION

Grants help volunteer fire departments

MDC, in cooperation with the U.S. Forest Service, provided more than \$281,000 in grants to more than 140 volunteer fire departments. These grants help fund protective clothing, equipment and training.

Meat-donation program

Conservation agents coordinate and support the Share the Harvest program with the Conservation Federation of Missouri, local charitable organizations and local meat processors. During FY07, approximately 6,580 hunters donated 322,500 pounds of venison.

Community Assistance Program

Through the Community Assistance Program (CAP) and the closely related Corporate and Agency Partnership Program (CAPP), MDC enters into agreements (usually 25-year) with cities, counties, state and federal agencies, businesses, foundations, schools and colleges to provide fisheries management at existing lakes and ponds, and to cooperatively develop and maintain facilities for anglers and boaters at lake and stream areas. MDC has agreements with 114 partners for the cooperative management of 146 public lakes (9,236 acres of water), 41 stream-access areas, four lake-access areas and six aquatic-resource education ponds.



LANDOWNER ASSISTANCE

Technical assistance

Field staff provided service through approximately 20,062 rural and urban landowner contacts, including 9,665 on-site landowner visits. Staffers assisted landowners with habitat management plans. Staffers also answered 4,634 requests for wildlife nuisance and/or damage assistance, including 906 on-site visits.

Private lake and stream management

We responded to 7,579 requests for watershed, floodplain, riparian corridor and stream or lake management information and technical assistance on streams or lakes. We made 1,435 on-site visits and wrote 182 recommendation letters or management plans. Staff conducted 39 stream or lake management workshops attended by 1,176 people. We also coordinated or participated in 69 watershed-focused resource management projects.

Equipment grant program

MDC designed and initiated the Conservation Equipment Grant Program. The program targeted organizations that assist MDC with delivering private-land habitat programs and technical assistance to private landowners. We awarded approximately \$100,000 in grants to 12 separate organizations.



PLACES TO GO

Online atlas improved

We made a comprehensive update to the Department's online

conservation atlas. Information about the features, facilities and recreational opportunities available on each of 1,000-plus conservation areas owned or cooperatively managed by MDC is available online. A companion regulations database, linked to the atlas, provides information on regulations and seasons relating to hunting, fishing, camping and other outdoor activities on each area.

Conservation area use

We improved horse trails on several MDC areas. The improvements have eliminated hazards to riders, provided for year-round horse-trail riding and reduced some erosion resulting from heavy public use.

Land management

We conducted habitat-management activities on approximately 150,000 acres of public land. Staff spent nearly 132,000 hours on area maintenance.

ACCOUNTING FOR DEPARTMENT OPERATIONS

Listened to Missourians

We employ a variety of scientifically sound measures to assess public opinions, expectations and recreation participation. This information guides decisions about regulations and fish, forest and wildlife management. In FY07 there were 63 activities that involved 310,306 people, which included public information surveys, focus groups and public meetings.

Improving information management

Integrated Data Framework is an effort to consolidate and integrate, into a single electronic place, existing and new sources of information that will be used to make more informed management and policy decisions. During the year, we hired a contractor to help examine what information systems existed, what information was stored in those systems, what information employees required to effectively do their jobs, how best to integrate the information and to perform an analysis to map out where we want to go.

Tracked strategic plan accomplishments

This was the first fiscal year of tracking accomplishments of The Next Generation of Conservation, MDC's strategic plan approved by the Conservation Commission in April 2006. The plan identifies nine goals, 28 results we want to achieve and 61 specific actions that MDC will work with Missourians to achieve. An automated, web-based data entry program has been developed to facilitate accomplishment tracking.

What the Money Bought—Fiscal Year 2007

County Assistance Payments—\$1,396,404 Included payments to Missouri’s counties for levee and drainage district taxes, forest cropland payments, payments in lieu of real estate taxes and county aid road trust payments. Since 1980, more than \$12.42 million has been paid to Missouri counties in lieu of taxes.

Capital Improvements—\$22,855,287 Work included fish hatchery improvements, development of nature centers, river accesses, wetlands, shooting ranges, land acquisition transactions and renovation and repair of facilities statewide.

Fisheries—\$11,908,332 Managed 924 lakes and 40 stream management areas for public fishing. More than 833,543 people bought fishing permits, making fishing one of the most popular outdoor activities in Missouri. Fish hatcheries stocked 9.6 million fish in public lakes and streams.

Forestry—\$15,410,871 Fostered a healthy and growing forest resource. Examples include distributing 4.7 million seedlings for planting to nearly 12,000 landowners, developing 152 Landowner Forest Stewardship Plans, bringing an additional 38,336 acres under total resource management, managing 438,700 acres of public forest land, monitoring insect and disease threats and facilitating development of the state’s forest industry.

Wildlife—\$16,074,091 Worked toward ensuring wildlife populations are in harmony with habitat and human enjoyment. Managed 526,198 acres of public land and implemented programs to maintain and restore natural communities and wildlife diversity across Missouri’s landscape.

Outreach and Education—\$15,383,196 Sustained and nourished Missourians’ connection to the outdoors by providing educational materials, schoolteacher contacts, outdoor skills programs, the *Missouri Conservationist* magazine, web-based information, books, videos, hunter education, staffed shooting ranges and conservation nature centers.

Private Land Services—\$8,775,673 Helped private landowners to achieve long-term conservation of natural resources and their land-use objectives. Delivered nearly \$1.1 million in cost-share funds to 607 private landowners; provided on-site technical assistance to 9,665 private landowners; improved habitat for quail and grassland songbirds on more than 13,000 acres of private land; helped landowners enroll almost 5,800 acres into the Wetland Reserve Program; and assisted 4,634 private landowners in controlling nuisance wildlife.

Protection—\$14,181,263 Paid for law enforcement in every county as well as resource management, information, education and public service contact activities conducted by 167 conservation agents who directly contacted more than 735,000 people. Coordinated the Share the Harvest Program where more than 6,580 deer hunters donated more than 322,000 pounds of venison to less fortunate Missourians. Conservation agents, along with 2,200 volunteer instructors, conducted 1,066 hunter education classes, certifying 25,000 students.

Resource Science—\$12,075,236 Provided the science-based information needed to effectively manage Missouri’s natural resources. Resource Science monitors the status of Missouri’s fish, forests and wildlife, recommends conservation actions, evaluates these actions and reports the results. In addition to surveys of fish and wildlife, more than 200,000 Missourians were contacted to determine their outdoor activities and opinions about conservation programs.

Regional Public Contact Offices—\$3,296,676 Provided regional public contact offices.

Administrative Services and Human Resources—\$28,646,718 Paid for human resources, federal reimbursement administration, hunting and fishing permit point-of-sale system, fiscal services, distribution center, print shop, fleet management, vehicle and equipment maintenance centers and information management and technology. Also includes other agency appropriations, Department-wide equipment and other essential services.

Design and Development—\$12,188,760 Provided engineering, architectural, surveying and construction services for conservation programs and maintenance of conservation areas and facilities.

Administration—\$2,550,447 Paid for audits, legal counsel and the coordination of strategic planning, environmental policy development, cultural resource reviews, public involvement and river basin management.

RECEIPTS

Conservation Sales Tax	\$103,332,575
Permit Sales	\$30,953,155
Federal Reimbursements	\$23,210,639
Sales and Rentals	\$8,947,515
Other Sources	\$3,965,239
Interest	\$1,267,398
Total Receipts	\$171,676,521

DISBURSEMENTS

County Assistance Payments	0.85%
Capital Improvements	13.86%
Fisheries	7.23%
Forestry	9.35%
Wildlife	9.76%
Outreach and Education	9.34%
Private Land Services	5.33%
Protection	8.61%
Resource Science	7.33%
Regional Public Contact Offices	2.00%
Administrative Services & Human Resources	17.39%
Design and Development	7.40%
Administration	1.55%

MISSOURI STATE BUDGET

Health & Social Services	35.8%
Education	28.4%
Government Services	21.2%
Transportation	11.2%
Natural & Economic Resources	2.7%
Conservation	0.7%
<i>MDC represents less than 1% of the total state budget</i>	
Total State Budget	\$21,239,817,527

Hunting and Fishing Calendar

FISHING

	OPEN	CLOSE
Black Bass (certain Ozark streams, see the <i>Wildlife Code</i>)	5/26/07	2/29/08
impoundments and other streams year-round		
Bullfrog	Sunset	Midnight
	6/30/08	10/31/08
Gigging nongame fish	9/15/07	1/31/08
Paddlefish	3/15/08	4/30/08
Paddlefish on the Mississippi River	3/15/08	5/15/08
Trout Parks Catch and Release	11/9/07	2/11/08
Friday–Monday at Bennett Spring, Montauk and Roaring River and daily at Maramec Springs		

HUNTING

	OPEN	CLOSE
Coyotes	5/7/07	3/31/08
Crow	11/1/07	3/3/08
Deer		
Archery	11/21/07	1/15/08
Furbearers	11/15/07	1/31/08
Groundhog	5/12/08	12/15/08
Pheasants		
North Zone	11/1/07	1/15/08
Quail	11/1/07	1/15/08
Rabbits	10/1/07	2/15/08
Ruffed Grouse	10/15/07	1/15/08
Squirrels	5/26/07	2/15/08
Turkey		
Fall Archery	11/21/07	1/15/08
Youth (resident only)	4/12/08	4/13/08
Spring	4/21/08	5/11/08
Waterfowl	please see the <i>Waterfowl Hunting Digest</i> or see www.MissouriConservation.org/7573	

TRAPPING

	OPEN	CLOSE
Beaver and Nutria	11/15/07	3/31/08
Furbearers	11/15/07	1/31/08
Otters and Muskrats	11/15/07	see <i>Wildlife Code</i>

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/.



A bald eagle discovers the comb-over.

Contributors



DAVE HAMILTON (left) and **REX MARTENSEN** Dave Hamilton was with the Department for 25 years. His position as the state's furbearer biologist allowed him to study a variety of wildlife, including black bears. Dave enjoyed hunting and spending time with his wife and children. Rex Martensen supervises the Department's wildlife damage management program.



MIKE KRUSE has enjoyed a 21-year career as a fisheries researcher and administrator with the Department of Conservation. His favorite outdoor pursuits are fly fishing and waterfowl hunting, which he says are even more fun when family and friends can join him.

TIM SMITH is a botanist in the Conservation Department's central office in Jefferson City. He works to catalog Missouri's native plant diversity and to protect rare species and their habitats. When most of the flora goes dormant in the fall, he keeps afield for the upland bird hunting seasons.



TIME CAPSULE

January 1998

In *Flashes of Blue*, Julie Lunstead writes about the abundance of bluebirds in Missouri. She gives credit for the strong population to Missouri citizens and their efforts to build bluebird nest boxes and place them in rural locations.

Bluebirds are unable to excavate their own nesting cavities and so must rely on nest sites abandoned by other bird species. Because they prefer to hunt insects for food, bluebirds are rarely attracted by feeders. Nest boxes help bring these delightful birds into viewing range and provide valuable sites for raising young. Other species that might use bluebird nesting boxes include black-capped and Carolina chickadees, tufted titmice, downy woodpeckers, tree swallows, house wrens and house sparrows. The nests of the non-native house sparrow may be removed.—*Contributed by the Circulation staff*



behind the CODE

Trapping seasons are set for quality fur.

BY TOM Cwynar

Fur is again fashionable, in part because it's so "green." Why wear fake fur, when the real thing comes from natural, renewable, non-polluting sources?

Trapping furbearers provides both outdoor recreation and a small source of income for more than 5,000 Missourians. The Conservation Department regulates trapping to maximize the value of the fur harvested, to ensure proper treatment of animals and to control wildlife populations.



Missouri's trapping season overlaps the period when furs are at their prime. An animal's fur grows, reaches a point when its value is greatest, then declines in quality with time and wear.

The season opens slightly earlier than when most furs are their absolute best to give trappers more opportunity to capture animals before winter curtails their movements. It closes at about the time that winter fur begins to decline in quality.

The general furbearer trapping season runs from Nov. 15 to Jan. 31. Otter trapping in Zone E closes on Feb. 20. Beaver and nutria trapping closes on March 31. These extended seasons reflect how trapping is used to control some animal populations.

Trapping is useful to wildlife management in other ways. It's the tool of choice for reducing or eliminating damage by wildlife, and pelt sales data is the primary source of information for Conservation Department biologists monitoring the populations of furbearers in the state.

AGENT NOTES

Contact the Conservation Department when dealing with nuisance wildlife.

CONSERVATION AGENTS RECEIVE numerous reports of wild animals causing damage.

A wildlife species usually is just a nuisance to people directly affected by their activities. For example, raccoons sometimes become a problem for homeowners or farmers when they steal garbage or pet food or raid gardens or crop fields. However, lots of people, including me, enjoy seeing raccoons. I like having a healthy raccoon population because I am an avid coon hunter.

Most of the nuisance wildlife calls I receive here in northeast Missouri concern raccoons, skunks, opossum or, sometimes, deer or turkey. In southern Missouri, agents also have to deal with complaints about black bears. As black bears have moved into the state from Arkansas, they sometimes cause problems by getting into garbage cans and beehives or destroying gardens.

When dealing with deer, turkey and black bears, you must obtain permission and guidance from your local conservation agent. When dealing with any nuisance wildlife, it's a good idea to contact your conservation agent or regional Conservation Department office for advice, and to make sure your actions don't violate Missouri's *Wildlife Code*.



Gary Miller is the conservation agent for Scotland County, which is in the Northeast region. If you would like to contact the agent for your county, phone your regional Conservation office listed on page 3.

“I AM THE NEXT GENERATION OF CONSERVATION”

Eleven-year-old Haley Rotert participated in a youth rabbit hunt at the August A. Busch Memorial Conservation Area near St. Louis last year. “I didn’t shoot any rabbits, but I had a good time,” said Haley. “I can’t wait to go rabbit hunting again this year.” Haley enjoys hunting with both her mom and dad. Said Haley: “I like going hunting, because every time you take game, you feel very proud of yourself.” To learn more about conservation activities, visit www.MissouriConservation.org.—PHOTO BY CLIFF WHITE



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www.MissouriConservation.org/15287

Free to
Missouri households