MISSOURI CONSERVATIONIST

VOLUME 86, ISSUE 11, NOVEMBER 2025

SERVING NATURE & YOU

POACHING IS NOT A VICTIMLESS CRIME.

Poachers steal from all of us, including hunters, anglers, outdoor recreationalists, and nature watchers. Missourians can protect nature by reporting poaching to the Operation Game Thief (OGT) hotline.

If you witness or suspect a wildlife violation, report it to your local conservation agent or call the OGT 24-hour, toll-free number 800–392–1111. You may remain anonymous, and you may be considered for a reward.

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MISSOURI 800-392-1111

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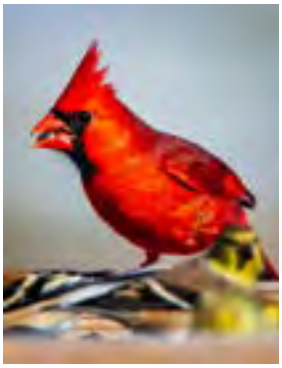

ON THE COVER

A northern cardinal perches at a bird feeder alongside goldfinches.

NOPPADOL PAOTHONG

EF800mm lens, f/5.6L IS UWM +1.4x
1/800 sec, ISO 400

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STAFF WRITERS
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DESIGNERS
Kate Morrow, Marci Porter

PHOTOGRAPHERS
Noppadol Paothong, David Stonner

CIRCULATION
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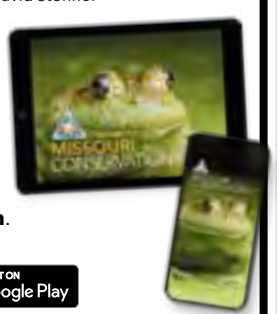

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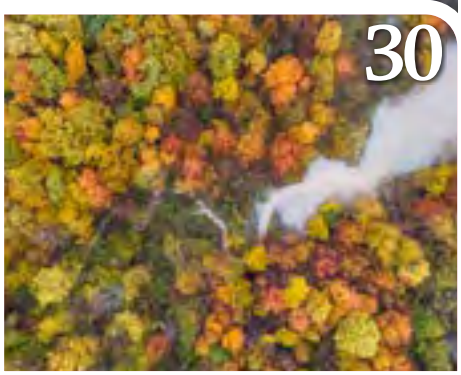

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The *Missouri Conservationist* (ISSN 0026-6515) is the official monthly publication of the Missouri Department of Conservation, 2901 West Truman Boulevard, Jefferson City, MO (Mailing address: PO Box 180, Jefferson City, MO 65102.) Equal opportunity to participate in and benefit from programs of the Missouri Department of Conservation is available to all individuals without regard to their race, color, religion, national origin, sex, ancestry, age, sexual orientation, veteran status, or disability. Questions should be directed to the Department of Conservation, PO Box 180, Jefferson City, MO 65102, 573-751-4115 (voice) or 800-735-2966 (TTY), or to Chief, Public Civil Rights, Office of Civil Rights, U.S. Department of the Interior, 1849 C Street, NW, Washington, D.C. 20240.

SUBSCRIPTIONS: Visit mdc.mo.gov/conmag, email subscriptions@mdc.mo.gov, or call 573-522-4115, ext. 3856. Free to adult Missouri residents (one per household); out of state $13 per year; out of country $19 per year. Notification of address change must include both old and new address (send mailing label) with 60-day notice. Preferred periodical postage paid at Jefferson City, Missouri, and at additional entry offices.

POSTMASTER: Send correspondence to Circulation, PO Box 180, Jefferson City, MO 65102-0180. Phone: 573-522-4115, ext. 3856.
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Printed with soy ink

Inbox

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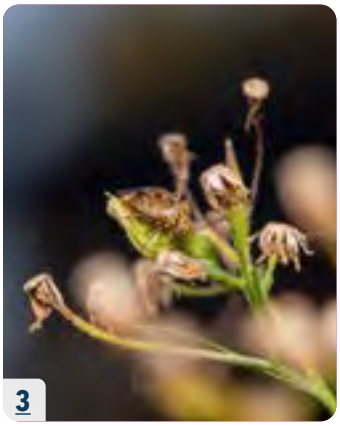

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4

Want to see your photos in the *Missouri Conservationist*?

Submit your photos online via flickr.com/groups/mdcreaderphotos-2025, mdc.mo.gov/magazine-reader-photos or by emailing readerphoto@mdc.mo.gov

1 | White-tailed deer by Heather Hennerich, via web

2 | Barred owl flying by Don St Cyr, via email

3 | Tarnished plant bug (*lygus lineolaris*) by Bryan Hunt, via Flickr

4 | Wild turkeys in the Ozarks by Michael Woods, via Flickr

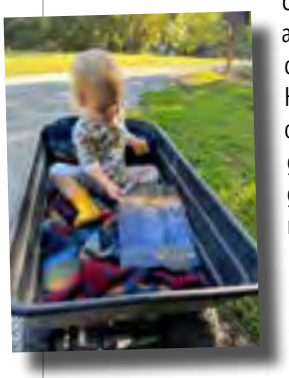
→ In the December issue we plan to feature even more great reader photos. Send in your best year-round pictures of native Missouri wildlife, flora, natural scenery, and friends and family engaged in outdoor activities. Please include where the photo was taken and what it depicts.

Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to:
MISSOURI CONSERVATIONIST
PO BOX 180
JEFFERSON CITY, MO 65102

CHECKING THE MAIL

My grandson, Oliver, enjoyed the September issue of the *Missouri Conservationist* after helping me check the mail. Happy to start out the next generation with great reading material.



Pen Brady
Stockton Lake

COFFEE TABLE WORTHY

We received the September issue of the *Missouri Conservationist* and wanted to follow up. Your cover photo is a masterpiece. It's a pleasure to display on the coffee table as the temps turn cooler.

Sitting on a Pumpkin [Page 10] and *Dark Skies* [Page 22] as well as the pictures were equally perfect. Shout out to your photographers and editors for putting this fall masterpiece together.

Dory Hamburg via email

A KEEPER

Wow! September 2025 is a keeper! No money anywhere is wiser spent on wildlife conservation. Thanks! Carry on!

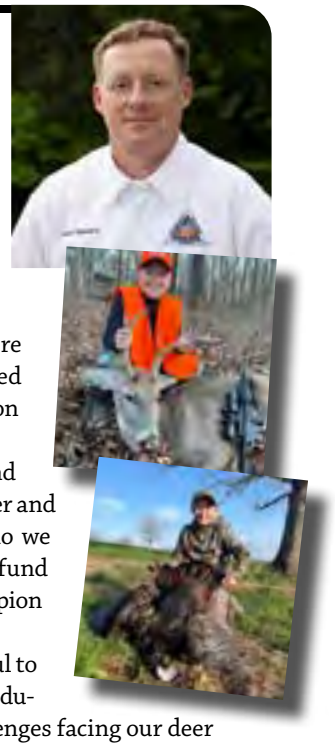
Beth Gibbs via email

GOOD SINCE '53

The September magazine was wonderful, as usual, but this issue was additionally more educational. I have received the magazine since 1953, when I was a sophomore in high school.

Carole Heiland via email

Up Front



Last fall, I watched my son take his first deer. A few months later, I helped him take his first turkey, just 100 yards from where he'd taken that first deer. These were two proud dad moments that will stay with me forever. The photos that capture those special days tell a story — one that is repeated annually across Missouri amongst families carrying on the tradition of hunting.

From the early conservationists to the hunters and landowners that were critical to the restoration of deer and turkey populations, these traditions are part of who we are as Missourians. Today, hunters and landowners fund conservation, support habitat restoration, and champion wildlife management.

As another deer hunting season begins, I'm grateful to the hunters, landowners, and other dedicated individuals that make conservation possible. Given the challenges facing our deer and turkey populations — from disease to habitat loss and a shifting landscape — this is at the forefront of my mind. By remaining true to our legacy of stewardship with the same spirit of partnership and commitment from which Missouri's conservation movement began, we can work together to ensure these iconic species remain healthy and abundant for generations to come.

JASON SUMNERS, DIRECTOR
JASON.SUMNERS@MDC.MO.GOV

Our Mission

The Missouri Department of Conservation protects and manages the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.

Conservation Headquarters

573-751-4115
PO Box 180
Jefferson City, MO
65102-0180

Regional Offices

Southeast/
Cape Girardeau:
573-290-5730

Central/
Columbia:
573-815-7900

Kansas City:
816-622-0900

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Have a Question for a Commissioner?

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Nature LAB

MDC uses research to improve fish, forest, and wildlife management

Compared to eastern cottontails, swamp rabbits are bigger, their fur is coarser, and their ears are shorter and more rounded. Adept at swimming, swamp rabbits readily plunge into water to evade predators.

SPECIES OF CONSERVATION CONCERN

Monitoring Missouri's Swamp Rabbits

Surveys look at swamp rabbits in flood zones and their population over time

by Dianne Van Dien

Because swamp rabbits are habitat specialists, they can't survive just anywhere. They require mature forests that have areas of water and patches of understory with plants and shrubs. In Missouri, you can find them in the bottomland forests of the Bootheel.

But much of their bottomland habitat has been lost to agriculture and development, resulting in fewer swamp rabbits. MDC began monitoring the species in 1991, conducting surveys at 10-year intervals and after major floods. MDC Biometrician Leah Berkman analyzed the survey data.

One dataset looked at how the rabbits responded to the Birds Point-New Madrid levee breach in 2011 and extreme flooding in that same area in 2018 and 2019. The rabbits did come back after the flooding, but Berkman also wanted to see if they used one side of the levee more than the other.

"The difference was a bit counterintuitive," she said. "The side that gets flooded more — the unprotected side — had a higher detection rate, which likely corresponds to a higher abundance of swamp rabbits."

Berkman explained that even though the protected side of the levee floods less frequently, that side is more developed and has smaller, scattered patches of suitable habitat, whereas the unprotected side has more forest and features that the rabbits need.

The 10-year surveys cover the full range of swamp rabbit habitat in southeast Missouri and assess the same sites each time. The most recent survey was completed in 2022.

"We found that there's been a three-county range expansion," Berkman reported, "so they're expanding back into the places that they were years ago along the Mississippi River … and occupancy levels were still high in other areas."

The rabbits may be responding to positive habitat changes that happened between the last survey and this survey, she said.

MDC thanks its partners at Southeast Missouri State University and Southern Illinois University Carbondale for assisting with the surveys and private landowners for granting access to their property.

At a Glance

Swamp Rabbit Surveys

Swamp rabbits can be hard to spot, so during surveys biologists look for the rabbits' latrines — piles of droppings on top of logs and rocks. While this survey method does not show the number of individual rabbits, it does show whether swamp rabbits are present. Areas with more latrines have more rabbits.

Swamp rabbits are considered an indicator of healthy bottomland habitat, so the presence of swamp rabbits can signify good habitat for other bottomland species as well.

SWAMP RABBIT: IRINA K., STOCK.ADOBE.COM; RABBIT DROPPINGS: DAVID STONNER

Learn more at **short.mdc.mo.gov/4tV**

MDC ANNOUNCES NEW COMMISSIONER

GOV. MIKE KEHOE APPOINTS SMITHVILLE MAN TO SERVE ON COMMISSION

BEN NICKELSON

MDC and the Missouri Conservation Commission welcome Frank Kruse of Smithville to the Missouri Conservation Commission following his recent appointment by Gov. Mike Kehoe and pending confirmation by the Missouri Senate.

"Frank has a long history of connection to conservation, including serving in a variety of roles with conservation organizations," said MDC Director Jason Sumners. "He also brings a wealth of professional experience in financial planning, business development, and marketing. We're excited to have his knowledge, experience, and passion for conservation on the commission."

Kruse is president of Martin Hill Advisors. He previously served as vice-president of business development and marketing for Sekisui XenoTech LLC. He also previously served as an international marketing representative for the Missouri Department of Agriculture.

Kruse is a graduate of the University of Missouri-Columbia with degrees in agriculture, economics, and Russian studies and a graduate of North Carolina State University with a master's degree in economics.

He is a member of several conservation organizations including the Missouri Conservation Heritage Foundation (MCHF), Theodore Roosevelt Conservation Partnership, and the Johnny Morris Institute for Fisheries, Wetlands, and Aquatic Systems.

Kruse was raised on a family farm near Carrollton, where he learned and lived conservation practices from an early age, such as creating and supporting wildlife habitat. One of his fondest memories is taking a break during harvest season to hunt surrounding draws and field edges with his brother and father. A lifelong outdoorsperson, he still enjoys hunting deer, turkey, ducks, and doves, along with fishing local streams, hiking, and backpacking.

Kruse and his wife, Nancy, have four grown children and reside on their family farm in rural Platte County where his conservation heritage continues through habitat creation and management for wetlands, woodlands, and fields. They raised their kids to be conservation minded and all enjoy the outdoors.

"One of our youngest kids really took to archery and was an early enrollee in MoNASP [Missouri National Archery in the Schools Program] years ago," Kruse said. "It is amazing how MoNASP has grown to include such a wonderful cross-section of young Missourians from many different walks of life who really learn and benefit from both their individual accomplishments and the teamwork that develops."

MoNASP, an in-school archery program for Missouri students in grades 4 through 12, teaches the basics of archery. It is coordinated through MDC, the Conservation Federation of Missouri, and MCHF — of which Kruse is the secretary/treasurer.

He said he is thrilled to have the opportunity to serve.

"I am thankful to the governor for this appointment, and I look forward to learning, leading, and serving," he said. "The future of our outdoors is at stake every day and we have to be engaged with Missourians to continue our legacy of conservation excellence for the next generations."

Kruse was appointed for a six-year term that will expire in 2031. He replaces outgoing Commissioner Steven Harrison of Rolla, whose term expired July 1, and joins Commissioners Margaret F. (Margy) Eckelkamp of Washington, Raymond T. (Ray) Wagner Jr. of Town and Country in St. Louis County, and Edward C. Clausen of Centertown.

The Missouri Conservation Commission consists of four members appointed by the governor with the advice and consent of the Senate. Commissioners serve six-year terms with no salary or other compensation with not more than two allowed from the same political party. Their responsibilities include appointing the MDC director, serving as MDC policy makers, approving regulations of the *Wildlife Code of Missouri*, strategic planning, and budget development and major expenditure decisions.

KEN BABCOCK JOINS CONSERVATION HALL OF FAME

Ken Babcock of Jamestown was the 48th inductee in the Missouri Conservation Hall of Fame. He received the honor during a special ceremony in September at the Stoney Creek Hotel in Columbia.

"Throughout his career at MDC, Ken either led, influenced, or supported initiatives that had transformative implications for the agency," said MDC Director Jason Sumners. "He had an early focus on integrating science, resource management, and the public's enjoyment of fish, forest, and wildlife resources. He expanded partnerships with state and federal agencies, non-government agencies, and private landowners. He also was instrumental in implementing the department's 1976 Design for Conservation."

After graduating from Hendrix College in Conway, Arkansas, with a bachelor's degree in biology in 1965 and earning his master's degree in wildlife management from Louisiana State University, Babcock began his career as a waterfowl biologist with the Mississippi Game and Fish Commission in 1967 before joining MDC in 1970. During his career at MDC from 1970 to 1997, Babcock excelled in various roles including research scientist, assistant wildlife division chief, and ultimately assistant director.

Babcock also led planning efforts to implement The North American Waterfowl Management Plan for Missouri.

"Ken was and still is committed to abundant and quality habitat for healthy long-term populations of all wetland species," Sumners added. "His efforts led the department's transition from lead to nontoxic shot for waterfowl, showcasing his commitment to addressing environmental issues, and ultimately assisting in the recovery of the bald eagle."

After retiring from MDC as an assistant director, Babcock was recruited by Ducks Unlimited (DU) where he served various regional and national roles, culminating in his role as the senior director of conservation programs.

Babcock helped develop a partnership with DU and the U.S. Department of Agriculture aimed at restoring more than 300,000 acres of bottomland wetlands in the Lower Mississippi Alluvial Valley. He also contributed significantly to conserving the North American Boreal Forest, serving on a team involving DU, DU Canada, First Nations, and the Pew Charitable Trust. Together, they developed a program to protect and sustainably manage a half-billion acres of this critical habitat for native and migratory birds.

After his retirement from DU, Babcock joined the Missouri Conservation Heritage Foundation (MCHF) where he helped in leading and reinvigorating fundraising efforts. He served on the board for two terms and continues to serve as an advisor to the board. He was also a key force in MCHF's efforts to partner with MDC and the University of Missouri in the development of the Johnny Morris Institute for Fisheries, Wetlands, and Aquatic Systems. Babcock was named the MCHF's 2024 Champion of Conservation.

The Hall of Fame honors living or deceased citizen conservationists, former employees of MDC and other conservation-related government agencies, universities, or organizations (including conservation law enforcement and conservation education-related activities) who changed the landscape of conservation in the state of Missouri in the field of fisheries, forestry, or wildlife resource management. To learn more about the Conservation Hall of Fame or to submit a nomination, visit **short.mdc.mo.gov/ZyG**.

Ask **MDC**

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Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Tulip tree

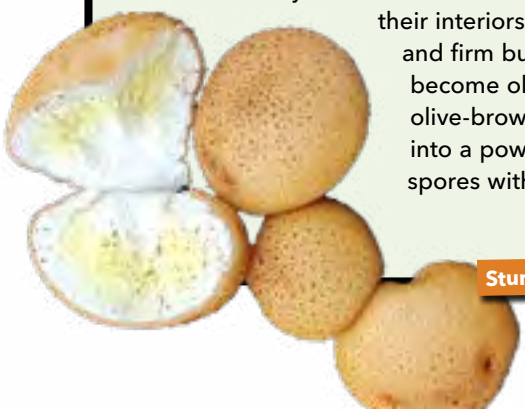
Q: Last autumn I took a trip to Tower Rock since the Mississippi River level was so low. Along the bank I ran across this tree. The leaves are extremely large, bigger than my outstretched hand. Can you tell me the species?

➔ This is a tulip tree, also known as a yellow poplar or tulip poplar (*Liriodendron tulipifera*). These trees are in the Magnolia family. When mature, they are large and stately, growing to 100 feet with long trunks and pyramid-shaped crowns. Tulip trees have been valuable ornamental trees — gracing lawns, parks, and cemeteries — since 1663 when they were first cultivated. The commercial uses for tulip trees include furniture, interior trim work, boxes, caskets, musical instruments, woodenware, and veneer.

A tulip tree's flowers, which bloom in May and June, are greenish-yellow, orange-banded at the base, tulip-shaped, and 3 to 4 inches across. These trees prefer the moist woods of ravines. They can be found along the streams of Crowley's Ridge and at the base of wooded bluffs along the Mississippi River in southeastern Missouri.

Q: What type of mushroom is this?

➔ These are stump puffballs (*Apioperdon pyriforme*). According to the National Audubon Society's *Mushrooms of North America*, their interiors are white and firm but eventually become olive-yellow or olive-brown, dissolving into a powdery mass of spores with age. Growing



Stump puffballs

TULIP LEAF: DAN GREEN; STUMP PUFFBALLS: BRANDON RICHMAN; HAWK: REBECCA MURPHY

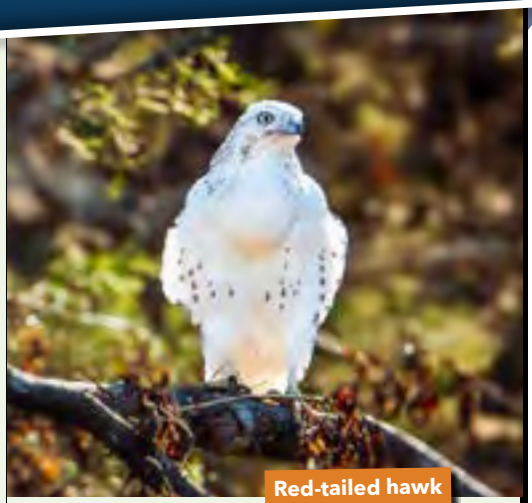
in clusters, these mushrooms are in season from July through November. They grow on stumps, logs, and woody debris. They are usually studded with a fine pattern of tiny spines with a pore at the top.

Stump puffball mushrooms are edible only when they are young and still pure white in color. To be safe, always be certain of your mushroom identification before consuming. For more information, consult *A Guide to Missouri's Edible and Poisonous Mushrooms* at **short.mdc.mo.gov/ZNf**.

Q: Is this a red-tailed hawk? Could it be leucistic?

This is a red-tailed hawk. The spots running across and between the belly and breast are reminiscent of the "bellyband" — an important field marker for red-tailed hawks. Also, the general size and head-to-body proportions are in line with a red-tailed hawk.

At first glance, this hawk could be considered either leucistic or a Krider's hawk. But upon closer examination of the photo, we know it's leucistic because of its blue eyes. Red-tailed hawks typically have yellowish to dark-brown eyes.



Red-tailed hawk

Birds can be completely leucistic, where all feathers lack melanin and the bird appears completely white. Partially leucistic birds can have one or more feathers that are white anywhere on their bodies, and the white is generally grouped on a feather tract, like the tail or head. Leucism can be genetic, a sign of nutrient deficiency, or a sign of aging. Typically, leucistic animals are partly white, with brown, tan, and gray coloring.

What IS it?

Can you guess this month's natural wonder?

The answer is on Page 9.

Jake Myers
JOHNSON COUNTY CONSERVATION AGENT
offers this month's

AGENT ADVICE

Every year, hunters across Missouri anxiously await the arrival of November and the opening of firearms deer season. Amidst all the excitement and preparation, don't forget to make safety a top priority. Whether you hunt on public or private land, always wear a hunter orange hat and vest, coat, or shirt. Make sure your tree stand is in good condition, and your personal safety harness has a fall arrest system that can be clipped to your stand. And always unload your firearm before transporting it up the tree. A little forethought will make for a safe and enjoyable season. For more information, consult MDC's *2025 Fall Deer and Turkey Hunting Regulations and Information* booklet at **short.mdc.mo.gov/ZVo**.

WE ARE CONSERVATION

Spotlight on people and partners

by Emily Franklin

Julie Kline

Seventh-grade science teacher Julie Kline was teaching about ecosystems when she noticed the severe lack of diversity in the courtyard of Central Middle School in Park Hills. She and her students decided to act.

A biodiversity dilemma

With support from the school principal, the class surveyed staff and student interest in creating a pollinator garden. Since 2021, the modest initial proposal has grown to cover the full courtyard, including the removal of invasive Callery pear trees.

In addition to growing into a great pollinator habitat, the space lets teachers personalize curriculum and has sparked student interest in agriculture, biology, and conservation careers.

by **David Stonner**

In Her Own Words

"Utilizing programs like Discover Nature Schools has helped our students find value in Missouri's natural resources and they want to get out and enjoy the many benefits of nature."

What's your conservation superpower?

SUSAN FLADER NAMED MASTER CONSERVATIONIST

Susan Flader of Columbia was named a Master Conservationist during a special ceremony in September at the Stoney Creek Hotel in Columbia.

"Susan Flader has played pivotal roles in advocating for the preservation of our state's natural landscapes through her involvement with the Missouri Parks Association and the Missouri Department of Conservation," said MDC Director Jason Sumners. "Her efforts have raised awareness about sustainable forest management, water quality, and public land conservation."

Flader is a professor emerita of American western and environmental history at the University of Missouri-Columbia. She has written extensively about Aldo Leopold — considered by many to be the father of wildlife ecology and modern conservation — and served as board chair of the Leopold Foundation. Flader also is a founder and past president of the American Society for Environmental History and the Missouri Parks Association (MPA).

Flader is best known for her scholarship on Aldo Leopold. In addition to numerous articles, she has authored or edited 10 books including her seminal book, *Thinking Like a Mountain: Aldo Leopold and the Evolution of an Ecological Attitude toward Deer, Wolves, and Forests* (1974), which established her as a leading voice in environmental history.

She has combined her academic work with conservation advocacy, taking on leadership roles in organizations such as the MPA and teaching at the University of Missouri.

Sumners added that as an influential educator at the University of Missouri, Flader has inspired generations of students in environmental history and policy.

"Her leadership has extended beyond academia into public service where she has served on numerous conservation boards and commissions, advocating for policies integrating scientific research with conservation practice."

Flader's research focuses on the relationship between people and natural ecosystems, and the evolution of conservation thought and practice. Key areas of her research include Aldo Leopold and ecological thought, Missouri conservation history, public lands and park preservation, and conservation policy and water resources.

"Her research provides a historical lens for understanding contemporary conservation challenges to help policymakers and citizens make more informed decisions regarding natural resource management," Sumners said.

Flader has also been involved with the L-A-D Foundation since the 1970s where she has had significant leadership roles in the organization that owns and manages the 146,000-acre Pioneer Forest and a dozen natural areas and parks in the Missouri Ozarks. She most recently was board president for the past seven years.

She has also served in leadership roles on the National Audubon Society board of directors and the Audubon Missouri board of directors. As an Audubon Missouri board member, she championed the establishment of the Audubon Center at Riverlands in the St. Louis metro area to engage urban and underserved communities in conservation. She is currently on the Audubon Center at Riverlands advisory board and continues to contribute her time, expertise, and resources to the center.

She has lectured extensively across the United States and internationally, served on numerous professional and environmental boards, and received many awards for her publications and conservation efforts.

The MDC Master Conservationist Award was created in 1941 to honor living or deceased citizen conservationists, former commissioners of the department, and employees of conservation-related agencies, universities, or organizations who have made substantial and lasting contributions to the fisheries, forestry, or wildlife resources, including conservation law enforcement and conservation education-related activities in the state. To learn more about the Master Conservationist Award or to submit a nomination, visit **short.mdc.mo.gov/Zyp**.

DAVID STONNER

MANDATORY CWD SAMPLING

During opening weekend of firearms deer season, Nov. 15–16, hunters in certain CWD Management Zone counties must take their harvested deer (or its head) to a mandatory CWD sampling station. Stations are open from 7:30 a.m. to 8 p.m.

Counties that require mandatory sampling Nov. 15–16 are Audrain, Bollinger, Boone, Callaway, Cape Girardeau, Carroll, Chariton, Clark, Cole, Daviess, Dent, Douglas, Grundy, Harrison, Henry, Howard, Lewis, Livingston, Madison, Maries, Marion, Miller, Moniteau, Morgan, Osage, Ralls, Randolph, Saline, Shannon, St. Charles, St. Clair, St. Louis, Texas, and Webster.

Note that Callaway, Cape Girardeau, Daviess, Harrison, Henry, Marion, Miller, Moniteau, Morgan, Ralls, St. Louis, and Texas counties are new additions to the CWD Management Zone.

Refer to MDC's *2025 Fall Deer & Turkey Hunting Regulations and Information* booklet for a complete list of sampling stations in these counties and other related information.

WHAT IS IT?

BUR OAK ACORN

Bur oak trees bear fruit in the form of an acorn between September and October. But this is no ordinary acorn. Bur oaks are Missouri's only native oak tree to develop an acorn with an unusual fringed border. The nuts are brown, smooth, and rounded at the top. A scalylike cup covers more than half of the base of the nut. A hairy fringe borders the cup all around the acorn.

PHOTOGRAPHING YOUR HARVEST

EXAMPLES AND TIPS FROM MDC PHOTOGRAPHERS

by David Stonner and Noppadol Paothong

OH DEER

CLIFF WHITE

Photographing a Deer Harvest

» Show respect when presenting the animal.

- Wipe away blood.
- Tuck legs under body.
- Tuck tongue into mouth.
- Lay the deer on its side with the exit wound facing away from the camera.

» Place your rifle or bow, action open, safety engaged, and muzzle facing in a safe direction.

» For antlered deer, kneel behind the deer's head. Hold the head up, facing the camera, at a natural angle.

» Avoid photographing an animal where it was field dressed.

General Photography Tips

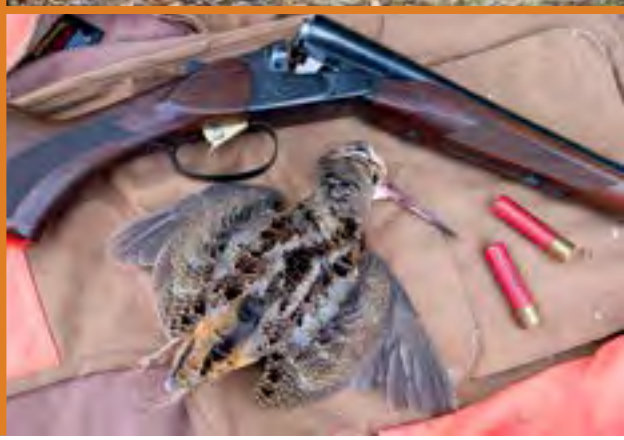
» Notice your background — look for spaces with no distractions (cars, buildings, people, etc.).

» Include your friends and family that accompanied you on your hunting trip. Even if everyone was not successful, they are part of the memory of the day.

» Watch for harsh shadows obscuring your subject(s).

CLIFF WHITE

FANCY FEATHERS



Get Creative: Use your decoys, gun, calls, shells, or other items to help compose a shot of your harvest.

Get Creative: For male turkeys, fan out the tail.

Photographing Your Fowl Harvest

» Show respect when presenting the animal.

- Wipe away blood.
- Consider the angle of the body, neck, and head when holding your harvest.
- Position your harvest in a natural pose. Avoid photographing particularly mangled specimens.

» Avoid photographing an animal where it was field dressed.

» Make sure your firearm is pointed in a safe direction and the action is open.

General Photography Tips

» Be aware of harsh lighting and distracting shadows — when possible photograph your subject in a shady area.

» Take advantage of natural beauty around the location.

» Include your family and friends — even the furry kind.

Catch of the Day

Photographing Your Catch

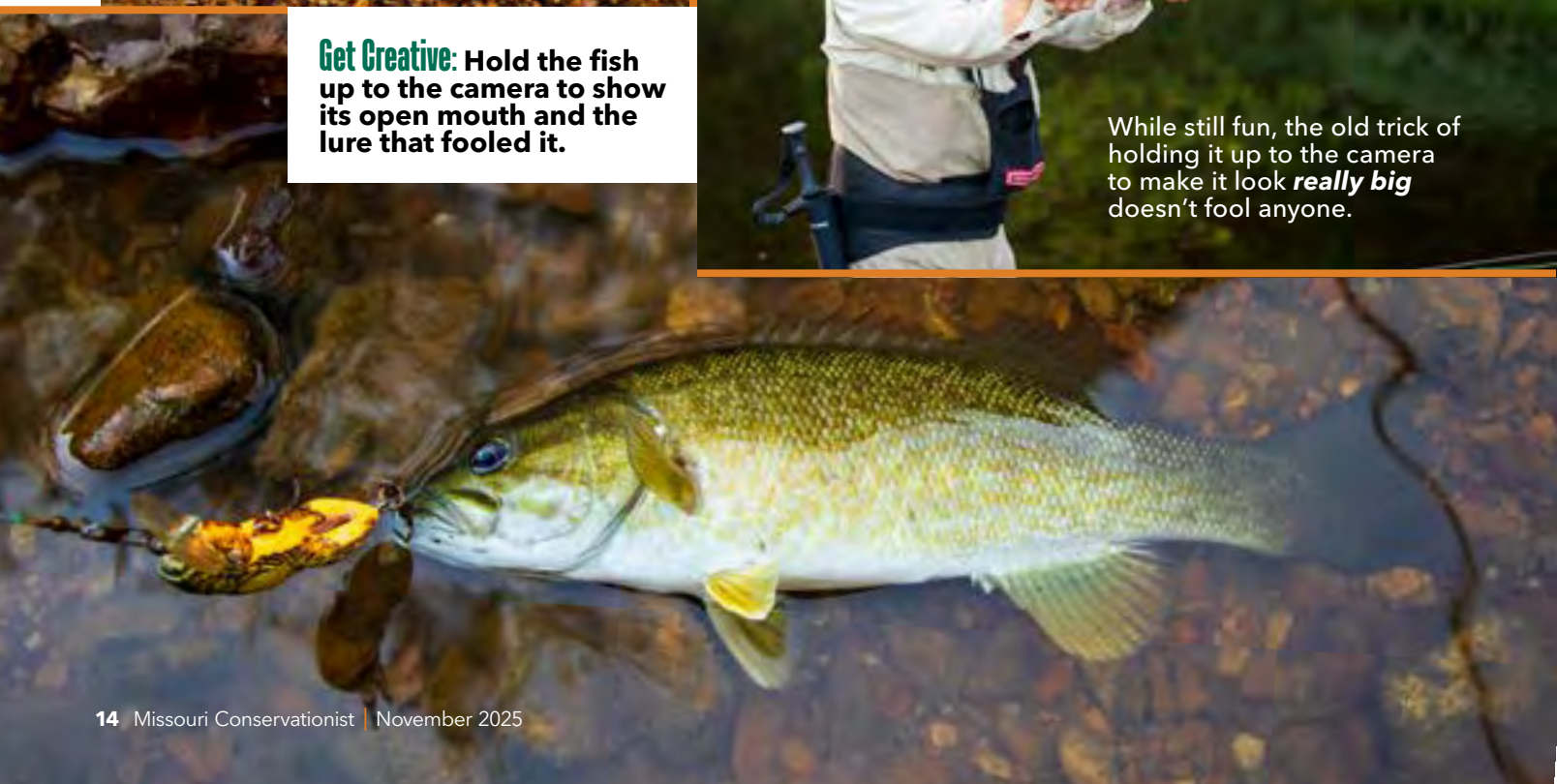
» Always get your hands wet before handling fish.

» For a fish you are releasing, gently cradle it horizontally and hold it at a comfortable distance from your body before releasing it gently back into the water.

» For a fish you are keeping, along with the above suggestion, try a few more photos by placing it on the bank or bow of your boat with the rod and reel next to it to provide a sense of scale.

» Fish lose their vibrant colors quickly, so don't wait until the end of the day to get photos of your really nice catches.

While still fun, the old trick of holding it up to the camera to make it look ***really big*** doesn't fool anyone.



Get Creative: Hold the fish up to the camera to show its open mouth and the lure that fooled it.

Beyond the harvest, the environments in which animals live and you visit are equally memorable.

As long as you're smiling — and following regulations — you'll capture the precious memories of hunting and fishing. ▲

"Gardening in the SKY"

PROJECT FEEDERWATCH TAPS INTO BACKYARD BIRDWATCHING TO FUEL SCIENCE

by Dianne Van Dien

Black-capped chickadee

JIM RATHERT

"The chickadee comes to the feeder. Even now, so close to twilight! Less than half an ounce of feather and hollow bone, ten drops of blood, heart smaller than a fingernail — yet she survives all night, every night, all winter."

These words, from an essay by author Melanie Rae Thon, express so well the wonder — the fragility and strength — of our backyard birds.

A fascination and fondness for chickadees, cardinals, nuthatches, and other birds that visit feeders seems to be widespread. Surveys estimate that more than 50 million households in the U.S. have backyard feeders. According to the Wild Bird Feeding Institute, "backyard bird feeding stands as the second-largest outdoor hobby in the United States, following gardening closely."

The popularity of backyard bird feeding prompted the Cornell Lab of Ornithology and Birds Canada to tap into it as a potential resource for learning about birds. In the winter of 1987–88, they started Project FeederWatch, known to organizers and participants as simply FeederWatch. This citizen science project asks people to record the highest number of each species they see at their feeders over two consecutive days each week from November through April.

During the project's first year, more than 4,000 people signed up. Since then, the numbers have climbed, with more than 30,000 people enrolling each season since 2020–21. With everyone following the same protocol, millions of sightings can be grouped together in a vast database. Each participant provides a piece of the whole, a snapshot of what bird species are doing (where they are and in what abundance) all over the U.S. and Canada on a week-by-week basis.

A Win for Science

With data coming in over decades from across the two countries, FeederWatch has helped scientists see bird population trends at the continental, regional, and species level. As a long-term dataset, it can identify changes in the timing of bird migration and changes in species' ranges. Because participants provide information about their site — surrounding habitat, vegetation, types of seeds and feeders — scientists can look at what features attract more birds. Besides counting, participants have the option of reporting other observations, such as mammals in the feeder area, interactions between species, and if any birds show signs of eye disease or other illness. Through the latter, FeederWatch can alert scientists to where diseases are spreading and if large outbreaks are happening.

All the raw data is available for download from the FeederWatch website so scientists (and anyone) around the world can mine it and analyze it in various ways to learn more about birds. With 38 years of data collected and counting, this amounts to millions of records. Researchers in other organizations and universities have used this resource by combining the data with other datasets to enhance their studies. Dozens of scientific papers have been written using FeederWatch data. But there's no way scientists would be able to collect this information if it were not for the thousands of FeederWatch volunteers.

A Win for Volunteers

Nicole LaPlante began counting for FeederWatch at her home in Grain Valley about five years ago and has continued to participate each year since.

"I had just started my love affair with birdwatching, and FeederWatch offered a great way for me to get to know the birds in my own backyard," she says. "It's just a fun and relaxing way to spend my mornings. I grab a cup of coffee, perch in my favorite chair, and start watching the world wake up with birds."

NOPPADOL PAOTHONG

In Kansas City, Darla Burns watches and counts birds once a week at the Anita B. Gorman Conservation Discovery Center, which designates two days a week for volunteers to come in and count for FeederWatch.

"It's relaxing. It's beautiful. It's like gardening in the sky," says Burns. While gardening is her primary activity, she says counting feeder birds is a "winter balance activity" that she can do during the months when it's too cold to garden. Instead of colorful flowers, there are colorful birds.

Sherry Leonardo participates in a variety of citizen science efforts that keep her busy year-round. Being part of programs like FeederWatch, she says, is a way of "giving back and not just doing it for myself. I like knowing that I'm contributing to a database that scientists see."

At Shoal Creek Conservation Education Center in Joplin, MDC Naturalist Jessie Ballard helps with that center's FeederWatch days.

"FeederWatch gives us a way to connect with fellow birdwatchers and helps monitor birds in our area," Ballard says. She enjoys "the excitement which fills the air when a new bird is seen at the feeders."

Seeing Patterns

Leonardo and others enjoy keeping records of their sightings so they can compare what they see from year to year. FeederWatch makes this easy by storing participants' counts and providing different ways to view the data, including graphs of species trends and a table that shows their sightings for each week through the season. Yet another table shows the percentage of

A FeederWatch participant at Burr Oak Woods Conservation Nature Center observes a bird feeder with a tufted titmouse.

times they've seen each species and compares it to what nearby FeederWatch participants are seeing. The database also allows participants to compare their current season with past seasons and look at weekly counts by state to see what's been seen at feeders statewide. So, while scientists apply the data at a larger scale, participants get to view it, too, to see the trends in their own backyards.

Great for Beginners

If you're interested in participating in citizen science or learning bird identification, FeederWatch can be a good way to start. Since the number of species that visit feeders is limited, especially in winter, learning backyard birds can seem less daunting than choosing from all the birds in a bird book. Participants can request free materials, including a poster of common feeder species, through the FeederWatch program. Those needing help with a bird ID can reach out to FeederWatch, other birding groups, and nature center staff. A few nature centers even have days when the public can come in and help with the center's FeederWatch count.

Leonardo teaches visitors who come to the FeederWatch count at Burroughs Audubon Nature Center in Blue Springs the specifics of identifying birds. At the feeders, she says, "you can see the birds quite well even without binoculars," which makes it easier for people new to birdwatching to become acquainted with the birds and begin developing observation skills.

Tessa Poolman echoes the sentiment. "Watching birds at feeders is a great way for people to learn birds and get familiar with their behaviors," she says, "because you can't always get a good look at birds in other settings." Poolman, director of community conservation for the Missouri River Bird Observatory, organizes FeederWatch days at the Discovery Center. She says watching species at a feeder allows you to view them repeatedly from multiple angles, which engrains them in your brain and can help make identifying them in the field easier.

Every Count Counts

The weekly counts from feeders across the U.S. and Canada create "a treasure trove of numbers," says the FeederWatch website, that allow scientists "to draw a picture of winter bird abundance and distribution." For the most accurate picture, they need to know "where birds are as well as where they are not." So even when reports seem similar each week or only a handful of species are counted, the input still matters. It's the combined total that reveals what's happening with birds at large and assists conservationists in making decisions. The data gathered by the large community of FeederWatch volunteers, says the website, "provide information about bird population biology that cannot be detected by any other available method."

Who knew the simple act of counting backyard birds could make such a difference. ▲

Dianne Van Dien is an editor for MDC and writes Nature Lab *for the* Missouri Conservationist. *Her favorite backyard bird is the downy woodpecker.*

FeederWatch.org

The Project FeederWatch website is full of information about bird feeding, bird identification, landscaping for birds, resources for educators, avian diseases, and insights gleaned from FeederWatch data. All of this is available to anyone, not just FeederWatch participants.

How to Participate in FeederWatch

To join FeederWatch, you just need to choose a location and sign up online (note that there is a fee of $18 that helps cover the cost of running the program). Then pick two days in a row to count birds; the amount of time you watch and when is up to you. Data sheets can be printed from the website and data entered online, or you can download the FeederWatch app and use your mobile device. Find full details at **FeederWatch.org**.

The rules for counting are easy to follow but be sure to read them carefully. The protocol is a bit different from those of other bird counts. For instance, if a bird flies overhead without stopping in your feeder area, you shouldn't count it. (If you want to record birds that fly over or that visit outside of your FeederWatch days, you can do that on eBird, another database created by Cornell Lab of Ornithology. Learn more at **eBird.org**.)

Where to Watch

Although most people watch birds at backyard feeders, FeederWatch does not require you to have a feeder. Feeders will generally attract more birds but counts from yards with no feeders allow scientists to assess the effects of supplemental feeding. Yards with bird-friendly habitat are ideal for this.

If you want to watch birds at feeders but don't want to put up a feeder or you live somewhere where you can't, many nature centers have bird feeding stations that you can visit, and some offer FeederWatch days where they invite the public to count birds and the nature center staff submit the data.

When you make an account on FeederWatch.org, you can track data from your own backyard from season to season. You can also see nearby sightings of species you have seen and those you haven't.

Missouri Nature Centers That Offer FeederWatch Days:

Kansas City
Anita B. Gorman Conservation Discovery Center

Blue Springs
Burr Oak Woods Conservation Nature Center

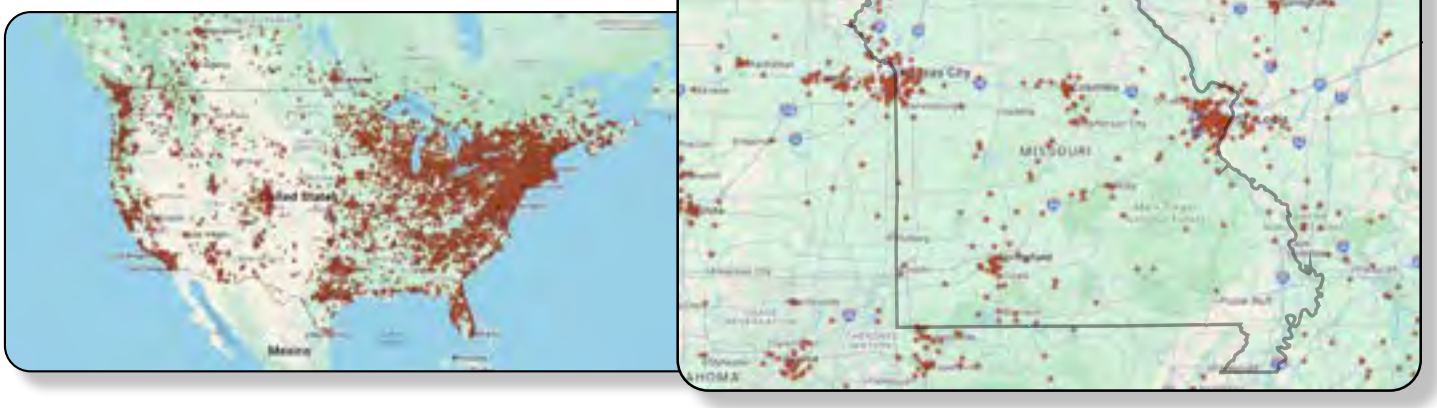
Burroughs Audubon Nature Center and Bird Sanctuary

Joplin
Shoal Creek Conservation Education Center

Contact each location for days and times. This list is not exhaustive. Check with your local nature center.

Representation of FeederWatch participants during the 2024–25 season.

MAP AS IT APPEARS ON FEEDERWATCH.ORG



Nature centers, such as Burroughs Audubon Nature Center and Burr Oak Woods Conservation Nature Center, pictured above, often offer opportunities for watching birds at feeders as well as help with bird identification.

Author Reflections

Although I've put up bird feeders for years, I didn't sign up for FeederWatch until last winter. I've enjoyed it for all the reasons others have stated, but additionally I've found that counting birds for FeederWatch makes me observe the birds more closely. Instead of merely glancing out the window on the way to the kitchen and thinking "Gee, there are a lot of cardinals today," or grabbing binoculars only when I spot an unusual species, I must set aside time to watch with intention. I'm sure I've noticed details that I would have missed otherwise, like that among all the house sparrows, white-crowned sparrows, and white-throated sparrows, there was one swamp sparrow scratching through seeds on the ground with them, and it was there every week for a month.

Also, counting requires my complete attention. When dozens of birds are hopping around on the ground or flying from feeder to tree branch and back, there's no room to think about worries or responsibilities. Cares are left behind. It's like a meditation.

Downy woodpecker

FeederWatch in Missouri, 2024–25 season

214
PARTICIPANTS (SITES)

90
SPECIES REPORTED IN TOTAL

Species seen the most at Missouri feeders:

NORTHERN CARDINAL

CHICKADEE
(BLACK-CAPPED AND CAROLINA COMBINED)

DARK-EYED JUNCO

DOWNY WOODPECKER

HOUSE FINCH

Citizen Science Projects

Citizen science is the term used to describe public participation in science projects. A large variety of citizen science opportunities are available. Project FeederWatch is just one example.

Other Missouri citizen science projects include:
MDC Wildlife Surveys **short.mdc.mo.gov/4j7**
Missouri Stream Team **mostreamteam.org**
Missouri Bumblebee Atlas **short.mdc.mo.gov/4j8**

Find more citizen science projects at **scistarter.org**.

NOPPADOL PAOTHONG

Binding Traditions

HOW TO MAKE AND USE DEER RAWHIDE

by Ginger Miller and TJ Peacher

PHOTOGRAPHS BY DAVID STONNER

Imagine holding in your hands a material that is both simple and extraordinary — stiff, strong, and shaped not by factories but by the careful hands of people who understood its value. That material is deer rawhide. For countless generations, rawhide was more than just a byproduct of the hunt — it was a link between people, animals, and survival.

WHAT IS RAWHIDE?

Unlike soft, tanned leather, rawhide is made by cleaning and drying the skin, leaving it firm and unyielding. And in that toughness lies its power.

Rawhide is a versatile material that was once essential to Native Americans' daily life. Plains tribes crafted rawhide into parfleches — painted, folded storage cases that were lightweight yet durable for carrying food and supplies during seasonal migrations. Strips of wet rawhide, which shrink and harden as they dry, were used as lashings to bind tools, secure arrowheads, or repair equipment.

Rawhide also played an important role in ceremony and art. It was stretched across drums to produce resonant tones and was often decorated with symbolic designs.

Early European settlers and frontiersmen adopted similar practices, using deer rawhide for snowshoes, tack, and tool repair because of its strength and accessibility.

Making rawhide represented a philosophy of resourcefulness and respect that ensured more parts of the animal were used and carried forward knowledge passed down through generations.

HIDE TO RAWHIDE

There are many ways to turn a fresh deer hide into rawhide. The following method is a reliable place to start, but don't be afraid to explore other approaches and adapt the process to what works best for you.

REMOVING THE HIDE

Remove hide from the deer and bone out the tail. At this stage, because it is fresh, the hide is referred to as a green hide. To remove the hide, cut a ring around the neck, legs, and genitals with a sharp knife, then continue the center cut from field dressing the animal outward to the legs. Next, put away the sharp knife safely and use a butterknife and gloved hands to remove the hide from the animal to avoid cutting holes in the hide.

Scrape as much fat and flesh from the hide as possible. To avoid cutting the hide, use an old butterknife, a mussel shell, or other dull metal edge. A pressure washer may expedite this process. Holes in the hide can be patched later using a sharp needle and thread with a baseball stitch.

PROCESSING THE HIDE

If you aren't ready to process the hide immediately, fold it skin-to-skin, roll it tightly, and freeze it. If freezer space is limited, hides can be thoroughly scraped of all fat and flesh then salted with non-iodized salt and rolled hair side out once dried. Hides stored in this way are best processed prior to warm weather and must be closely monitored for spoiling or souring.

When ready, thaw the hide and submerge it in water until the hair slips off of the hide with a gentle tug. Change the water once or twice daily. If it develops an odor, increase water changes. This controlled aging, called retting, breaks down the hide around the hair follicles. Depending on the ambient temperature, this may take from two days to two weeks.

A 5-gallon bucket or large tote will hold most hides. The hide must remain submerged. Place a bucket and/or weights on top of the hide to keep it beneath the water's surface. Place the hide in an area that remains above freezing. If it freezes, thaw your hide and continue.

FLESHING THE HIDE

Next, flesh the hide. This step removes the last of the fat and muscle from the hide, which prevents it from spoiling. Drape the hide over a fleshing beam and pin it in place with your body. A simple fleshing beam can be constructed by attaching a 6-foot piece of heavy-walled 4-inch PVC pipe at a downward angle to a 4-foot wooden triangle with a ratchet strap. Smooth the ends of your PVC using sandpaper to remove any sharp edges. Your fleshing beam can be wider or narrower, but it needs to be smooth to avoid cutting the hide.

A dull knife is recommended for scraping the hide because there is less danger of cutting it. A fleshing knife or blade can be purchased from a vendor that sells trapping or taxidermy equipment. It has a handle on each side in line with the blade. It is usually a mild steel blade, although 1905 high carbon steel or stainless steel can be used. Possible substitutes include a smooth-edged hoe or putty knife with corners rounded off. A dulled or used mower blade or board planer may also be used. Avoid sharp edges for safety and to avoid cutting the hide. Historically, the lower leg bone of a deer, called the cannon bone, was used as a scraper.

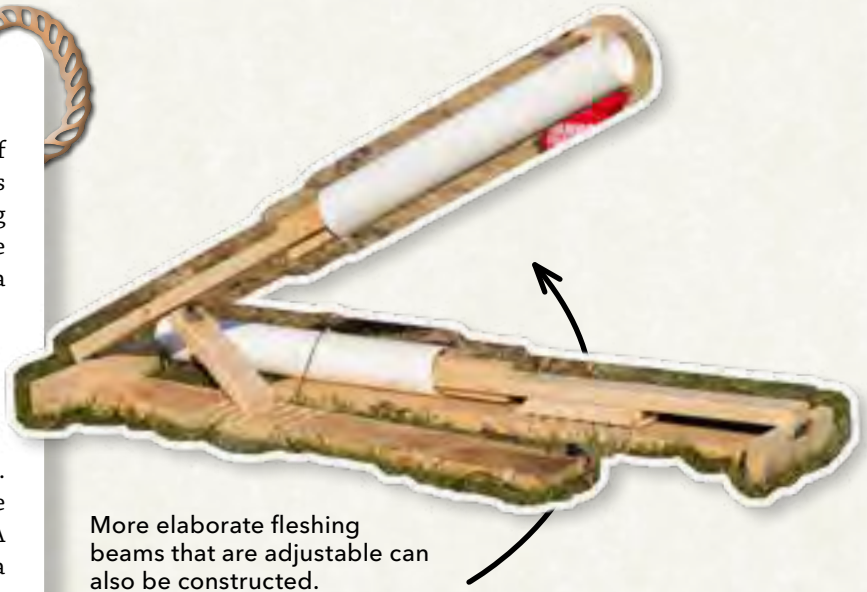
Take a moist, soaked hide and place it on a fleshing beam with the inner side (muscle side) facing up. Orient the hide so the neck end is towards you, and the tail end is down the beam towards the floor. Work from neck to tail.

Proper stance is important to reduce muscle strain. Bend your legs slightly, tense your stomach muscles slightly, and relax your shoulders. As you work, lock your wrists. Movement comes from your arm.

You will be pushing the fat and flesh down the beam, away from you, and off the hide. You need to break through the membrane to get to the skin itself. It is much easier to continue than it is to start.

Work in the area close to you. Work in short strokes; avoid large arm movements or excessive leaning over. You have the most control right in front of you, within arm's length. You will move the hide frequently on the beam.

The flesh side will require a steeper angle of your fleshing knife than the fur side. Try different angles to get a feel for what works best for you. You want to reach the white of the hide. Avoid going sideways with your fleshing knife. Work on the top of the beam, avoid the sides. Keep the hide flat on the beam.



More elaborate fleshing beams that are adjustable can also be constructed.

Work in the area close to you. Work in short strokes; avoid large arm movements or excessive leaning over. Your energy needs to be concentrated on the spot between the scraped part and the unscraped part.

Your energy needs to be concentrated on the spot between the scraped part and the unscraped part. Running your fleshing knife over the top of the flesh will waste your energy. Re-wet hide as needed.

Once the main area of hide is fleshed, turn the neck towards you and decide if you are up for scraping it. Because the neck skin is much thicker, this area of the hide will be more difficult to work with than the rest of the hide. Take a moment to clean up the flesh and muscle bits as they are slippery and easy to trip over. You are now ready to remove the hair and grain.

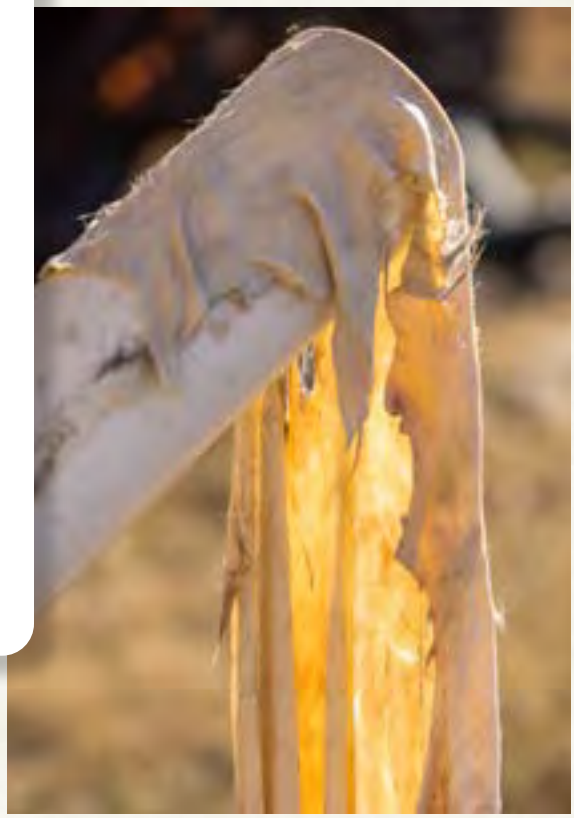
GRAINING THE HIDE

To grain the hide, begin with the neck end toward you. The grain of the hide is the natural surface of the hide, the outmost tough and durable layer. If you have removed the neck and tail, you can orient the hide from the direction of the hair. The hair lays down from the neck towards the tail. Grain in the same direction the hide lays. Remember: you are pushing the grain off the hide, not slicing or cutting it off.

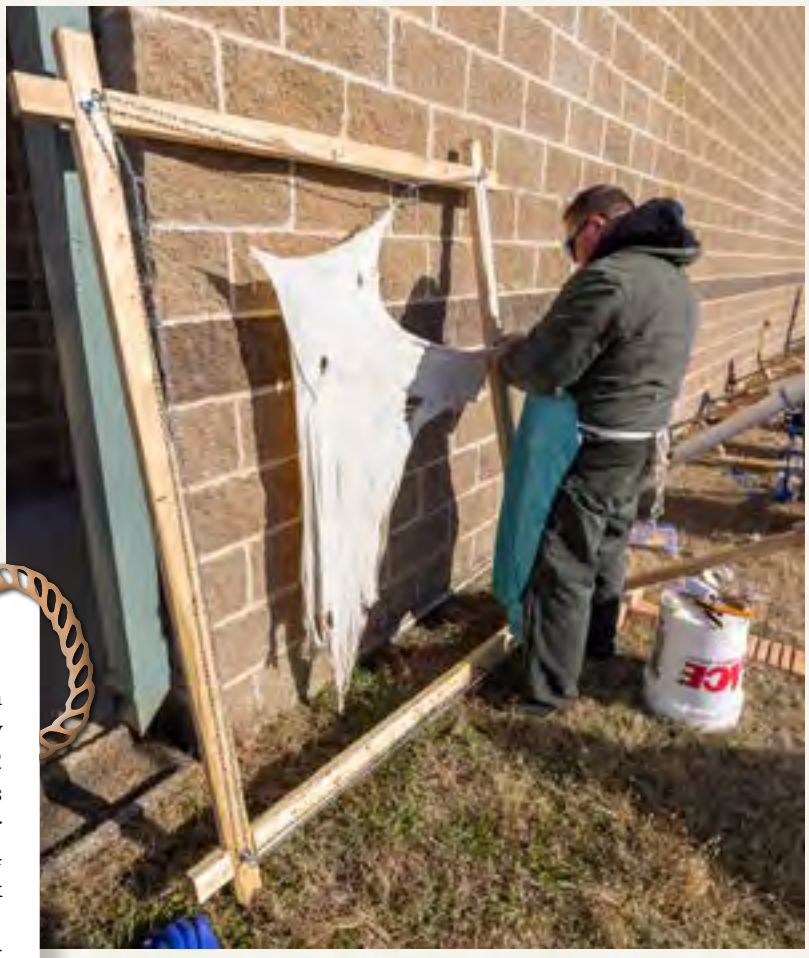
Graining requires putting a lot of downward pressure on your fleshing tool. Use short and powerful strokes. If you scrape past where the hairline is, you are wasting your energy. Concentrate your energy into the parts between where the hair and grain are versus where they are not.

Remove both the hair and the grain beneath it for a good, smooth product. The grain is the shiny part of shoe leather. Overlap strokes by about 50 percent to ensure you're getting past the slick grain and expose the rougher flesh beneath. Work down the hair rather than sideways. Frequently wipe the hair and grain from your fleshing knife.

Begin by graining a strip an inch or two thick across the shoulders right behind the neck. This will make it easier to work down the hide. Find a technique that works for you. Some find it easiest to make an upside-down V-shape down the hide, then remove the hair in the center to form a triangle.



Grain in the same direction the hide lays. Remember: you are pushing the grain off the hide, not slicing or cutting it off.



DRYING THE HIDE

Once both sides of your hide are cleaned up (free from hair, fat, and membrane), it is time to stretch and dry the hide. Construct a simple wooden frame around 2 feet longer and wider than your hide. Rawhide shrinks as it dries and can twist and snap wood. An average deer will require a frame around 6 feet by 6 feet. Four 2-by-4 boards secured in each corner with a carriage bolt work well for making a simple frame.

Make a small hole in one corner of your hide at least a quarter inch from the edge with an awl, ice pick, or nail. Immediately run a piece of twisted cotton string through the hole. Repeat this for the remaining corners, then tie the strings to the frame, gently stretching the hide as you tie the hide to the frame. Some of the first strings you tie may become loose and need to be retied as you proceed. Next, attach and tie strings halfway between corners to stretch the hide further. Repeat adding strings halfway between existing ties until strings are attached every inch or two around the hide.

Finished rawhide is strong, durable, and versatile. It can be shaped into knife sheaths, drumheads, or bindings for tools, cut into cordage or bowstrings, used to back bows, or even later tanned into buckskin leather. ▲

Ginger Miller, Ph.D., is a conservation educator for MDC's Kansas City region.

TJ Peacher is the education district supervisor for MDC's Kansas City and Northwest regions.

Get Outside in NOVEMBER

Autumn Has Two Faces

Autumn is often called Janus-faced. Like the two-faced Roman god Janus, autumn has two contrasting sides to it. The season begins with red autumn, with its brilliant red and orange leaves. By mid- to late-November, red autumn is replaced by gray autumn, or a preview of winter. Most leaves have fallen, and the wooded landscape is awash in gray, rusty, and tan tones. The dividing line between the two autumns is a hard freeze, often accompanied by strong winds and heavy rains.

Battle Bush Honeysuckle

Once fall color is gone, you may see some green remaining in the forest understory. That's invasive **bush honeysuckle**, which will remain green well into December. Because bush honeysuckle stays green after most plants have gone dormant, and in spring, greens before other species leaf out, it is easy to spot. It grows so aggressively it outcompetes native wildflowers and other plants and prevents forest regeneration. For more information on how to help control this problematic shrub, visit **short.mdc.mo.gov/ZCi**.

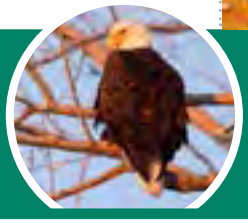
Give Your Rake a Break

The next time you look out your window and think, I should rake those leaves. Think again. Fallen leaves serve two important purposes. First, they provide refuge and food for backyard wildlife, including insects and other pollinators. Those insects are an important food source for nesting songbirds once spring rolls around. Second, fallen leaves create a mulch layer that helps rain and snow melt into the ground. Nutrients from the decaying leaves are also absorbed into the soil. So, sit back, relax, and let those leaves fall where they may.

JANUS FACE ILLUSTRATION: JOSEPH MEYER, PUBLIC DOMAIN, VIA WIKIMEDIA COMMONS; LONG-TAILED SALAMANDER: ALAN GRANT, DEPT ENVIRONMENTAL PROTECTION, BUGWOOD.ORG; EASTERN COMMA: ANSEL DOMMEN, BUGWOOD.ORG; CHICKEN OF THE WOODS: JOACHIM HELLER - STOCK.ADOBE.COM

Natural Events to See This Month

Here's what's going on in the natural world.



Eagles forage near lakes, rivers, and marshes.

Eastern witch-hazel blooms.

Long-tailed salamanders breed.

Hunting Season

November in Missouri is known as prime hunting season when it comes to turkey and deer. But you can also hunt for mushrooms! Hen of the woods grows through November. This edible mushroom is found at the base of oak trees and often produces in the same spot year after year. Chicken of the woods also grows through November in overlapping clusters on dead or dying deciduous trees, stumps, buried roots, or living trees. These choice edibles are orange to yellow, fleshy, fan-shaped structures. Mushrooms with your turkey or deer? Sounds delicious.

Hen of the woods

To be safe, always be certain of your mushroom identification before consuming. For more information, consult *A Guide to Missouri's Edible and Poisonous Mushrooms* at **short.mdc.mo.gov/ZNf**.

VIRTUAL

VIRTUAL HUNTING SERIES: Hide to Rawhide

Thursday • Nov. 13 • 5:30–6:30 p.m.
Online only
Registration required by Nov. 12. For more information, call 888-283-0364 or visit short.mdc.mo.gov/okf.
All ages

As you learned after reading *Binding Traditions* on Page 22, our ancestors used deer hides for clothing, containers, musical instruments, shelter, and more. This class will walk you through the steps described in the article. Learn how to flesh, scrape, stretch, and dry your deer hide to make your own rawhide.

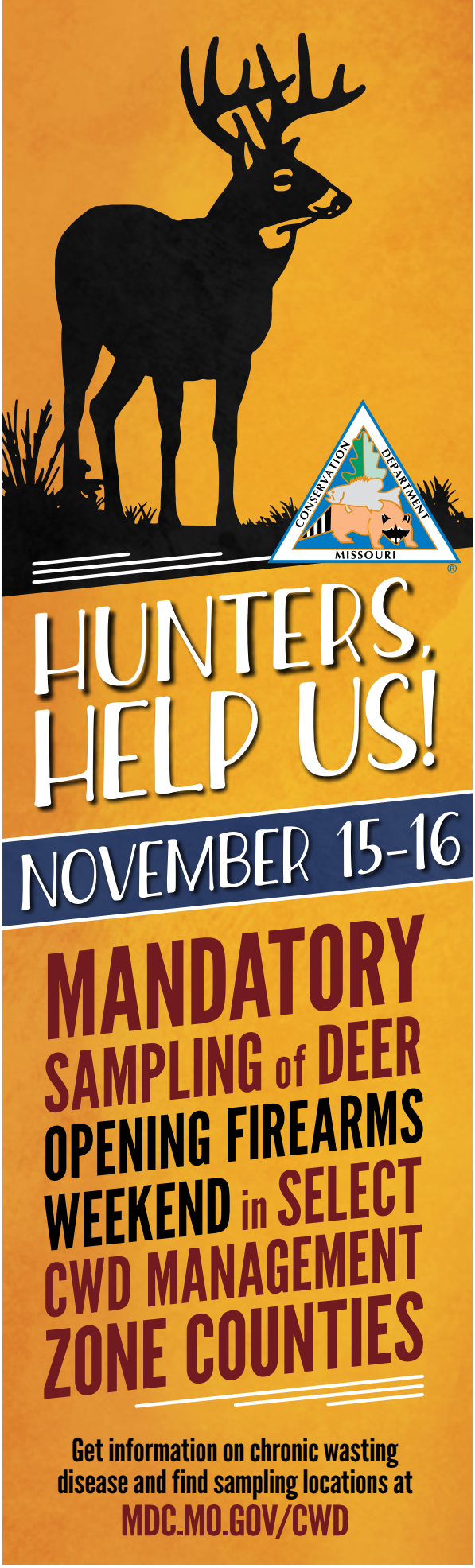
LEARN TO FISH: Virtual Fly Tying with TJ and Mike

Thursday • Nov. 13 • 6–7 p.m.
Online only
Registration required by Nov. 12. For more information, call 888-283-0364 or visit short.mdc.mo.gov/okg.
All ages

Come and tie flies with TJ and Mike. The theme is the difference between chironomids, midge nymphs, and scuds. Learn the biology behind each of these and the difference between the lures.

Eastern gray squirrels' fur becomes longer and silvery.

Eastern comma butterflies fly on warm days.



Places to Go

SOUTHEAST REGION

General Watkins Conservation Area

Rising above its surroundings

by Larry Archer

To say that General Watkins Conservation Area (CA) looks down on the rest of Scott County is not a judgement, but a statement of geological fact.

Located on 1,107 acres of the geological feature known as Crowley's Ridge, General Watkins CA rises several hundred feet above the surrounding flood plain that constitutes much of Scott County, said Mississippi Lowland District Supervisor Ryan Dirnberger.

"Typically, it's pretty flat, except for this hilly terrain," Dirnberger said.

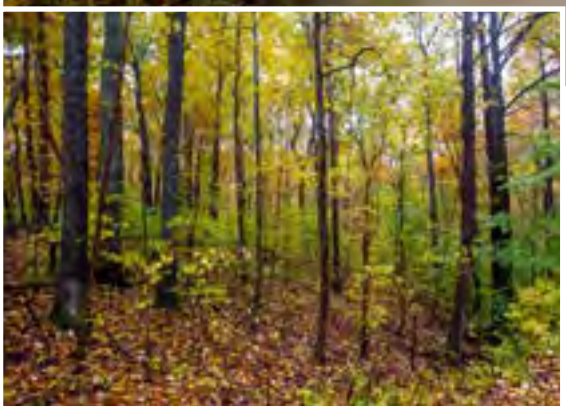
The elevation and the soils contribute to a variety of tree species "that you might normally associate with the Appalachian Mountain Range as opposed to the Ozark Range," he said.

The area's two designated hiking trails — Schlosser Loop Trail and Cemetery Ridge Trail — offer visitors access to both its variety of tree species and its variety of birds.

"The Schlosser Loop Trail is a good place to go birding because it does change into some different community type habitats," he said.

Early November visitors may get a glimpse of the area's lingering fall foliage, but Dirnberger advises caution, as the area is also heavily used during deer season.

"Try to stay visible," he said. MDC advises wearing something bright, such as an orange hat, jacket, or pack. "If you do go trekking off in the woods, just be aware there are other people that are doing the same thing."

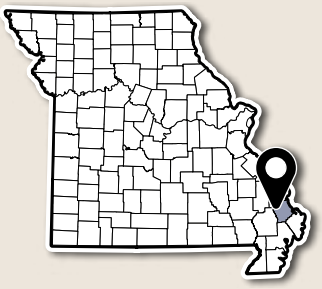


"General Watkins CA is one of the few public lands owned in Scott County, so it gets a lot of local use."

–Mississippi Lowland District Supervisor Ryan Dirnberger

DAVID STONNER

Lookout Mountain Lake, one of several lakes on General Watkins CA, is surrounded by late fall color. Primarily forested, the 1,107-acre area contains a forest type more closely resembling Appalachian than Missouri forests (inset).



GENERAL WATKINS CONSERVATION AREA

consists of 1,107 acres in Scott County. From Benton, take Highway 61 south 3 miles to the south side of the area. From Oran, take Highway 77 south 1.5 miles to the west side of the area.

39.123456, -92.123456

short.mdc.mo.gov/4Ld 417-895-6880

WHAT TO DO WHEN YOU VISIT

Bicycling Includes 4.4 miles of service and unimproved roads open to bicycling year-round.

Birdwatching The eBird list of birds recorded at General Watkins CA is available at **short.mdc.mo.gov/Z6Y**.

Camping Designated primitive camping area.

Fishing Includes nine fishing lakes totaling 30 acres. Black bass, catfish, crappie, sunfish.

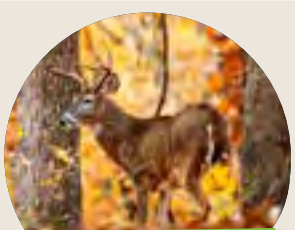
Hiking Two designated hiking trails (Schlosser Loop Trail and Cemetery Ridge Trail) totaling 3 miles. Service roads also open to hiking.

Hunting **Deer** and **turkey** regulations are subject to annual changes. Refer to MDC's regulation page online at **short.mdc.mo.gov/Zjw**.

Also **quail**, **rabbit**, and **squirrel**.

Trapping Special use permit required.

WHAT TO LOOK FOR WHEN YOU VISIT



White-tailed deer

Wild turkey

American beech

Cucumber magnolia

BEECH: DAVID CAPPAERT, BUGWOOD.ORG; MAGNOLIA: JOHN RUTER, UNIVERSITY OF GEORGIA, BUGWOOD.ORG

Wild Guide

Eastern Long-Tailed Salamander

Eurycea longicauda longicauda

Status
Common

Size
Length: about 3½–6½ inches; occasionally to nearly 8 inches

Distribution
Southeastern Missouri

Missouri has two subspecies of the long-tailed salamander (*Eurycea longicauda*) — the eastern long-tailed salamander and the dark-sided salamander (*E. longicauda melanopleura*). The two look slightly different and can be found in different regions of the state. However, there is a zone where their ranges overlap, and intermediate forms occur in that zone.

The eastern long-tailed salamander is medium-sized, slender, with a long tail. It's usually yellow but may vary from greenish-yellow to orange-yellow. The belly is plain yellow and there are dark brown or black markings and spots along the back and sides. The tail has prominent dark vertical bars. This species usually lives under rocks or logs near streams, springs, and seepages in forested areas. It also frequently occurs in caves.

LIFE CYCLE

Courtship occurs between November and early March within caves and in or near springs or creeks. Between December and March, females lay up to 100 eggs, deposited in single rows mostly in caves. The eggs hatch between four and 10 weeks, and the larvae are dark and aquatic (with gills). It may take one to two years to reach adulthood.

ECOSYSTEM CONNECTIONS

As predators, eastern long-tailed salamanders help control the population of insects and other creatures they eat. As prey, the adults, eggs, and young help feed larger predators. However, these salamanders are quite agile and can escape predators by using their tails for quick jumps. They also wave their tails to draw a predator's attention away from their head. Their tails easily twist off if grasped by a predator, allowing the salamander to escape. Individuals without tails, or with partially regrown tails, are not uncommon.

LONG-TAILED SALAMANDER: PSYCHOTIC NATURE, STOCK.ADOBE.COM

Outdoor Calendar

MISSOURI DEPARTMENT OF CONSERVATION

Free MO Hunting and MO Fishing Apps
MO Hunting makes it easy to view permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you view permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at **short.mdc.mo.gov/Zi2**.

FISHING

Black Bass
Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:
- Catch-and-Keep:
  May 24, 2025–Feb. 28, 2026

Nongame Fish Gigging
Streams and impounded waters, sunrise to midnight:
Sept. 15, 2025–Feb. 15, 2026

Paddlefish
On the Mississippi River:
Sept. 15–Dec. 15, 2025

Trout Parks
During catch-and-release season, Maramec Spring Park is open daily; other state trout parks are open Friday–Monday.

Catch-and-Release:
Nov. 14, 2025–Feb. 9, 2026

TRAPPING

Badger, Gray Fox, Red Fox
Nov. 15, 2025–Jan. 31, 2026

Beaver, Nutria
Nov. 15, 2025–March 31, 2026

Bobcat, Coyote, Mink, Muskrat, Opossum, Raccoon, River Otter, Striped Skunk
Nov. 15, 2025–Feb. 28, 2026

Rabbits
Nov. 15, 2025–Jan. 31, 2026

**Only hunters selected through a random drawing may participate in this hunting season.*

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at **short.mdc.mo.gov/Zib**. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at **short.mdc.mo.gov/ZZf**.

HUNTING

Badger, Gray Fox, Red Fox
Nov. 15, 2025–Jan. 31, 2026

Bobcat, Opossum, Raccoon, Striped Skunk
Nov. 15, 2025–Feb. 28, 2026

Coyote
Restrictions apply during April, spring turkey season, and firearms deer season.
Open all year

Crows
Nov. 1, 2025–March 3, 2026

Deer
Archery:
Sept. 15–Nov. 14, 2025
Nov. 26, 2025–Jan. 15, 2026

Firearms:
- Early Youth Portion (ages 6–15):
  Nov. 1–2, 2025
- November Portion:
  Nov. 15–25, 2025
- CWD Portion (open areas only):
  Nov. 26–30, 2025
- Late Youth Portion (ages 6–15):
  Nov. 28–30, 2025
- Late Antlerless Portion (open areas only):
  Dec. 6–14, 2025
- Alternative Methods Portion:
  Dec. 27, 2025–Jan. 6, 2026

Doves
Sept. 1–Nov. 29, 2025

Elk*
Firearms:
Dec. 13–21, 2025

Groundhog (Woodchuck)
May 12–Dec. 15, 2025

Pheasant
Regular:
Nov. 1, 2025–Jan. 15, 2026

Quail
Regular:
Nov. 1, 2025–Jan. 15, 2026

Rabbits
Oct. 1, 2025–Feb. 15, 2026

Sora, Virginia Rail
Sept. 1–Nov. 9, 2025

Squirrels
May 24, 2025–Feb. 15, 2026

Turkey
Fall:
- Archery Portion:
  Sept. 15–Nov. 14, 2025
  Nov. 26, 2025–Jan. 15, 2026

Waterfowl
See the Migratory Bird and Waterfowl Hunting Digest *or visit short.mdc.mo.gov/ZZx for more information.*

Wilson's (Common) Snipe
Sept. 1–Dec. 16, 2025

Woodcock
Oct. 18–Dec. 1, 2025

ILLUSTRATION: MARK RAITHEL

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@moconservation

Don't let this season end without taking in some fabulous fall color. The hickories and oaks at Indian Trail Conservation Area put on quite a show. Take a road trip and check it out or visit an area closer to home. What will you discover?

by **David Stonner**

Free to Missouri households

To subscribe, cancel your subscription, or update your address, visit **mdc.mo.gov/conmag**.