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44 and 41 years old. In the year 2050 my son and daughter will be in the middle of their lives and hopefully complaining about how little they see me...given all my time on trout streams and the like. It's not a difficult year for me to picture and generate hopes for. It is also a year that anchors a lot of predictive data in the field of conservation.

The trendline toward 2050 points to over 9 billion people and heavily increased needs for food, energy, and clean water. Unfortunately, it also points to exponential loss of habitat and biodiversity — and a corresponding growth in unmet human needs.

The following pages are about why those hopes don't turn to fears in the face of such data — but also why our mission is more urgent than ever.

We ask ourselves, and you, important questions. Instead of a primary focus on showcasing specific projects — we share our strategies and our desired outcomes of *Protection*, *Transformation*, and *Inspiration*. This approach is an invitation to review, reflect, provide feedback, and consider the ways you might continue helping advance our collective mission. We hope you'll accept the invitation and remain fully hopeful!

With warm regards,

Adam McLane, Missouri State Director

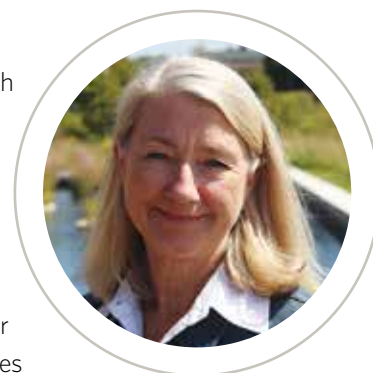
Amid the challenges our planet faces, successful local initiatives such as those by The Nature Conservancy in Missouri are reason to believe a healthier global environment is within reach.

The Conservancy's efforts in Missouri go well beyond our borders. Our freshwater programs benefit the Mississippi River Basin and our prairie restorations provide research on pollinators, best grazing practices, and watershed protection that is used by scientists all over the world. These efforts are part of a shared strategy that incorporates state and regional work into a global framework to address major climate threats by 2050.

Behind these efforts is a remarkable team whose accomplishments, capabilities, and vision gives us hope and inspires us all to be better stewards. Each day, we as trustees, see a tireless and dedicated team devoted to achieving solutions to conservation's biggest challenges. It's your support that makes their work possible — and their work that gives us all hope for a bright future!

With gratitude,

Beth Alm, Missouri Board Chair



Our cover photo is just one of the extraordinary photos featured in photographer, Matt Miles' new book *Missouri Wild and Wonderful*, which captures Missouri's most elusive wildlife and beautiful landscapes. For more information or to purchase the book, visit mattmilesphotography.com

Beyond the Classroom

Internships can inspire our next generation and provide opportunities to bridge the gap between academics and real-world conservation work that contributes to the health and sustainability of our world. In 2017, we hosted four interns. Here is their story, written by intern, Casey Jones.

In the summer of 2017, four interns joined the Missouri team: Alisa Blatter (Master of Landscape Architecture) and Eric Kobal (Master of Landscape Architecture & Master of Urban Design) both from Washington University in St. Louis, Matthew Murray (Tulane University) and myself, Casey Jones (Wake Forest University).

Alisa and Eric spent their summer at Dunn Ranch Prairie tasked to prepare a proposal of sites for short and long-term building projects. “I feel incredibly lucky to have been welcomed into the folds of this amazing ecosystem by the people who are on the leading edge of its care and preservation,” said Alisa. Applying techniques from their spring landscape studio course, they took into consideration the synthesis of sustainable productive landscapes, community integration,

and facilities and infrastructure design — ultimately recommending three sites on the prairie appropriate for a living building. “This experience at Dunn Ranch has been significant in strengthening my notion of what it means to be a landscape architect,” said Eric.

Matthew and I spent our summer researching stream buffer ordinances in Missouri. Our research revealed there are many variations of these ordinances, including the measurement of where the buffer begins, the width of the buffer, and if building and construction is prohibited within the buffer zone. Our research found that only 22 cities and 15 counties in Missouri have stream buffer ordinances and based on information from other states, we gave our suggestions on a path towards statewide standards.

Thank you TNC for making our summer with you so valuable!



A Voice for Nature

Connecting our work with our federal, state, and local leaders is necessary for change. “We already have a wonderful network of established partnerships in private, state, federal, and non-governmental entities. These established relationships are crucial to our success and moving our work forward,” said Holly Neill, The Conservancy’s External Affairs Manager.

Holly helped coordinate efforts in 2016 for the renewal of Missouri’s Parks, Soils, and Water Sales Tax, which passed with a resounding 80.1% of the vote. She is now using this momentum and success to leverage those relationships to influence policy and practice change within the Parks, Soils, and Water Program. She is also establishing a strong presence at our State Capitol for Advocacy Day and organizing legislator field days to our preserves and projects to spark deeper conversations with our leadership.



LEARN MORE about our work
at [nature.org/mopolicy](https://www.nature.org/mopolicy)

The eyes of the future are looking at us and they are praying for us to see beyond our own time.

— TERRY TEMPEST WILLIAMS



9.6 Billion

people are estimated to be living on our planet by the year 2050.¹

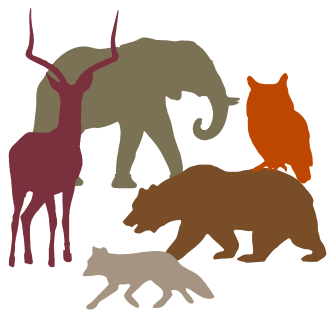
70%

of the world's population will be living in urban places— compared to only 49% today.¹



55%

increase in global water demand by the year 2050. If current usage trends don't change, the world will have only 60% of the water it needs in 2030.¹



One quarter

of the world's species could be headed for extinction—due to rapid climate change and loss of healthy habitat.²

2050: By the Numbers

When the eyes of the future look back on us, what will they think? The year 2050 will be a reality for many living today. Children born today will be in their early 30's, starting families and launching careers. Their lives will be shaped by the decisions we make today, this year, this decade. What we do now — or maybe more importantly what we fail to do — will have a direct impact on the lives of the next generation.

The stresses on the planet will be tremendous in 2050. There will be more people to feed and more energy needed. A rapidly

changing climate will drive stronger storms, scarier droughts, and rising seas. Looking at the challenges we face is hard, but overcoming them doesn't have to be. Natural climate solutions are available to us today on a global scale. Research shows that nature can provide about a third of what is needed to slow or stop climate change in the next two decades, if we help it.

In Missouri, we are working on strategies that include promoting sustainable agriculture, building healthier cities, protecting our land and water, and tackling climate change



60%

increase in demand for global food production — which is more than population growth — as more people enter the middle class and transition to protein-rich diets. We'll also need to do this with less water and fertilizer, and without expanding agriculture's footprint.¹



5.4°F

rise in global surface temperature—due to greenhouse gas emissions and climate change.¹

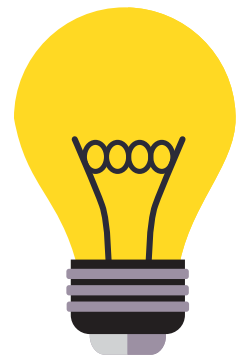


13%

projected decrease in mature forest areas, which are richer in biodiversity.³

60%

increase in demand for energy, as the population grows and more of humankind gets access to energy.⁴



— and we are not alone. Across the Conservancy, in all 50 states and 72 countries we have staff all working towards these same goals. What we do in Missouri will have global impacts on a local level.

The numbers on this page are realistic assumptions — what is projected if humankind continues with business as usual with minimal changes. But there's another option, a conservation pathway, where we address these issues using science-based,

natural solutions on a global scale. We are confident that this conservation pathway can be achieved.

Together, we can shift the world from business as usual to a future where people get the food, energy, and economic growth they need without sacrificing nature. We are the generation that can change this trajectory. Our time is now. Simply put, nature is this decade's most important solution.

Protecting Missouri's Biodiversity

Is there a place for nature in an increasingly changing and crowded world? The answer must be yes.

For over 65 years, The Nature Conservancy has been protecting the lands and waters on which *all life* depends — animals, plants, and people. As we've evolved into an organization that works towards whole-system solutions, encouraging compatible land use, and creating resilience within a changing climate — our north star remains the protection of the rich tapestry of biodiversity that both people and nature need to thrive.

We are investing in streambank buffer projects that increase the connectivity of habitats, restoring migratory corridors, and protecting the quality of waterways that our communities and native species rely upon.

In places like the Grand River Grasslands and the Ozarks, we are

protecting large blocks of land to preserve biodiversity and encourage source populations of sensitive species. Innovative solutions like the Ozarks Conservation Buyer Fund help us protect critical habitat in cost-effective ways that stretch your donations and our limited resources further.

Our work in the Current River is protecting the most biologically significant river in the Midwest. It is home to an impressive array of plants and animals, including more than 35 globally significant species — some of which are found nowhere else on earth.

Beyond protecting our lands and waters, we must also manage them. By using prescribed fire, eradicating invasive species, and deploying best ecological management practices, your support allows us to maximize the impact of every acre we steward.

 **LEARN MORE** about how we are protecting our biodiversity at nature.org/mobiodiversity



Funding the Future

Protecting the lands and waters on which all life depends is not an easy task. It takes whole-system, large-scale, proactive, and strategic thinking. It was just that kind of thinking that produced the Ozarks Conservation Buyer Fund in 2007. That year, a generous Missouri couple set a challenge to raise \$2 million, which they would then match dollar-for-dollar, creating a \$4-million fund to protect the threatened waters of the Missouri Ozarks.

The purpose of this fund and program is simple — yet immensely effective. The resources are available for the Conservancy to acquire priority lands in the Ozarks, protect them with a working forest conservation easement, and then sell to private buyers allowing sustainable timber harvesting.

Over a decade later, this fund is still actively used to acquire land that could otherwise be bought and used for unsustainable development or damaging land management practices for short-term financial gain. Knowing that the land and water are inextricably linked, this fund has helped to safeguard the health of the Ozarks streams and thousands of species that call it home.

Why Fire?



Prescribed fire is used on Conservancy preserves across the state — targeting a goal of 3,000 to 5,000 acres burned annually. But why is fire important and what is the Conservancy doing to transform the way fire is used as a management tool?

Tom Fielden, the Conservancy’s Land Stewardship and Fire Manager in Missouri, has been working in prescribed

and wildland fire since 1986 and is currently the Chair of the Missouri Prescribed Fire Council. “Prescribed burns optimize plant growth by returning nutrients to the soil — often generating new growth within a couple weeks. This fast moving and lower intensity burn leaves root systems alive under the soil and restores a process that many of our landscapes need for overall health,” said Fielden.

“Working with private landowners and partners is where we often see the greatest impact,” said Fielden. The Conservancy partners with state and federal agencies throughout Missouri on cooperative burns and works with private landowners to expand use of this critical management tool beyond the boundaries of our own preserves.



LEARN MORE from Tom about prescribed fire at nature.org/mofire

Doug Ladd Fire & Stewardship Program

Doug Ladd devoted much of his career teaching, demonstrating, and researching the ecological benefits of prescribed fire.

To honor his commitment, we have established the Doug Ladd Fire & Stewardship Program. “Having the ability to increase outreach, provide additional trainings, and maintain necessary equipment will allow us to build upon and further advance a big part of Doug’s incredible legacy with this chapter,” said Adam McLane, Missouri State Director.



TO MAKE A GIFT to the Doug Ladd Fire & Stewardship Program go to nature.org/DougLaddFire



Farms of the Future

Agriculture is vital to Missouri’s economy — covering over two-thirds of our state’s total land acreage and employing nearly a quarter-million Missourians. With an estimated global population of 9.6 billion people, what will a Missouri farm look like in the year 2050? Can our natural resources support a demand for more food and the need for more water? Given increased demands and the effects of climate change, can we create a future in which both humans and biodiversity thrive?

Research has shown we can — if, and only if, we implement responsible solutions today. The Nature Conservancy is already working with partners to promote healthy agricultural practices with two science-driven strategies: sustainable grazing and nutrient reduction. Currently, Missouri is the leading phosphorous contributor in the Mississippi River Basin, with the Grand River watershed in northwest Missouri as the highest contributor in the state. We are working with private landowners and state and federal agencies to incorporate native vegetation along stream corridors throughout Missouri’s agricultural landscapes; helping secure eroding streambanks using bioengineering techniques; and studying the benefits of native grasses to livestock operations.

Using a collaborative, science-based approach, we can help farmers and ranchers feed a growing population while ensuring clean and abundant water supplies, healthy lands, and a stable climate.



LEARN MORE about our sustainable agriculture projects at nature.org/moag

THIS PAGE TOP TNC burn crew member © Chris Helzer/TNC. BOTTOM A prescribed burn at The Nature Conservancy’s Derr Sandhills Prairie © Chris Helzer/TNC. TOP RIGHT Corn crop at Franklin Demonstration Farm in the Mackinaw River watershed © Timothy T. Lindenbaum/TNC

Designing for Nature

Since 2013, The Nature Conservancy and the Sam Fox School of Design and Visual Arts at Washington University in St. Louis have been collaborating to transform the interface between design and conservation.

This partnership, one of the first of its kind, embraces a transformative vision for integrating conservation and ecosystem sustainability into the training and culture of architects, landscape architects, and urban designers to better serve society. We hope this investment will create ecologically relevant and sustainable outcomes in all aspects of the students' future work.

Washington University's Bruce Lindsey and Jesse Vogler, in partnership with TNC's Conservation Biologist Doug Ladd, envisioned and crafted the partnership in response to the influence these students can have on our future. "The future of our ecosystems, and thus the planet and our society, are increasingly dependent upon agriculture and design. These two disciplines heavily shape the intersection of human culture with the natural world — a trend which will only increase as Earth becomes more densely populated and urbanized," said Ladd.



This partnership also incorporates internship opportunities for students to immerse themselves in all aspects of applied conservation on landscape-scale projects at our Current River and Dunn Ranch Prairie preserves.

"To sustain healthy ecosystems, upon which we depend for our quality of life, we need to ensure that designers have a full understanding of those ecosystems — their health, function, and role," Ladd said. "It is the goal of this partnership to give them the tools to build a vibrant sustainable society where people and nature thrive."



LEARN MORE about the partnership at nature.org/WashU

Connecting with Communities

The Conservancy's Western Ozarks Waters Initiative in southwest Missouri has developed many tools for community outreach, knowledge sharing, and public participation. One of those tools that's been effective to engage conservation partners and key stakeholders in the Elk and Shoal Creek systems is conducting community conservation forums.

The purpose of these forums is to introduce our work to the community and seek their input as conservation partners. Getting landowners, farmers, recreational outfitters, elected officials, agricultural businesses, and state and federal agencies all in one room allows everyone the opportunity to discuss the challenges and possible solutions to protect the waters that the community depends on.

"It's inspiring to sit in a room filled with people who all want the same thing — healthy rivers and strong communities. I'm glad we can be the organization that helps bring them all together," said Drew Holt, Western Ozarks Waters Coordinator.

Investing in Healthy Soil



Everyone knows we need clean air and water, but we don't think as much about the soil beneath our feet — and that's a big mistake. Soil is literally the foundation of all civilizations, of life itself even; we grow 95 percent of the food we eat in the soil. Healthy soils are also crucial for maintaining clean water supplies and mitigating climate change. As Franklin Delano Roosevelt once noted, “The nation that destroys its soil, destroys itself.”

The United States is losing 10 billion tons of fertile soil every year, exponentially faster than nature can replenish it. This is particularly alarming when you consider the role U.S. farms play in feeding the world's growing population. Overall, we'll need a substantial increase in agriculture production by 2050 if we are to feed the estimated 9.6 billion people who will be inhabiting the planet.

But soil degradation doesn't have to be our downfall — in fact, if we take the right steps, soil can be the key ingredient in a changed future.

Benefits from achieving widespread adoption of soil health practices include:

- Mitigating 25 million metric tons of greenhouse gas emissions—the equivalent to taking 5 million passenger cars off the road for one year.
- Reducing 344 million pounds of nutrients lost through agricultural runoff.
- Eliminating 116 million metric tons of soil erosion.

So, what does this mean in Missouri and beyond Missouri — and how are we supporting these efforts?



James Cole (Director of Conservation Programs, The Nature Conservancy in Missouri)

“Soil and biodiversity are inextricably linked—both have evolved together. Soil is the fountain that nourishes so much plant and animal life—including humans—and yet there would be no soil without this diversity of life. The need for soil health is particularly sharp in Missouri, where farms cover nearly two-thirds of our landscape. The Conservancy’s work in this sector transcends the ‘dirt’ beneath us — it will shape the climate, food systems, drinking water, and tree of life future generations will inherit.”



Diane Herndon (Senior Sustainability Manager, Nestlé Purina PetCare)

“At Nestlé Purina, our business relies on farmers throughout the Midwest to grow and raise our high-quality ingredients. We are committed to sourcing responsibly and adding value to the agricultural systems where we source, now and for years to come. Healthy soil is the foundation for healthy crops that help nourish people and pets. This is why we chose to invest \$1 million in The Nature Conservancy’s reThink Soil program.”



Larry Clemens (Director of North America Agriculture, The Nature Conservancy)

“Our work on healthy soils in the U.S. connects us with communities and companies up and down the supply chain fueling agricultural production across the country — and often around the world. It is my firm belief that by working together, committed partners can help ensure a sustainable future for generations to come. Increased coordination and investment in the Soil Health Roadmap will lead to tangible economic and environmental benefits for U.S. farmers, businesses and communities.”



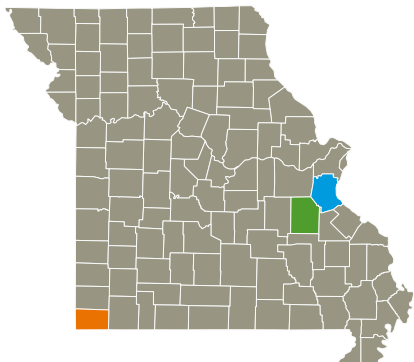
LEARN MORE about soil health and The Nature Conservancy's Soil Health Roadmap at [nature.org/mosoil](https://www.nature.org/mosoil)

Missouri's Bioengineered Banks

Eroding streambanks are among the biggest threats to our rivers and streams — dumping tons of sediment and nutrients into the water harms people and aquatic communities alike. Transforming the way we protect streams is a focus for our freshwater team in Missouri. “This is truly an issue that impacts both people and nature,” said Dr. Steve Herrington, Missouri’s Director of Freshwater Conservation. “Landowners are losing their land; it’s taking more money and equipment to provide clean drinking water to our communities, and we are losing habitat for hundreds of species.”

Rip-rap, which is quarry rock dumped along the banks, has traditionally been used to try to fix erosion problems. But rip-rap can be costly, only protects the surface of streambanks, can be prone to failure, and provides little ecological benefit. Fortunately, there are better options — bioengineering solutions that stabilize banks using natural materials such as trees and live plantings that provide better long-term protection as well as critical habitat needed for aquatic species to survive. These techniques are commonly used nationwide, but are rarely implemented in Missouri.

We are currently working on numerous projects around the state with a host of partners — from private landowners to state and federal agencies — to demonstrate how these natural solutions work.



LABARQUE CREEK, Jefferson County

LaBarque Creek is the most biologically diverse creek that flows into the Meramec River in the St. Louis region, with over 40 fish species that call it home. It also had a 250-foot stretch of eroding streambank that had dumped over 400 tons of soil and sediment into the stream in the past few years — polluting the water and destroying habitat.

In the summer of 2017, the Conservancy partnered with Washington University’s Tyson Research Center to use bioengineering techniques to stabilize the bank. Representatives from state and federal agencies including the Department of Natural Resources (DNR), U.S. Fish and Wildlife Service (USFWS), and the U.S. Army Corps of Engineers (USACE) participated in a partner day at the site to see first-hand the process and benefits.

“The USACE is currently developing design approaches for stream restoration in the Meramec and Big Rivers,” said Herrington. “Having them visit our demonstration site to see the process will help inform how they can use these techniques on a larger scale for a greater impact.” The USACE currently has proposed over 40 sites for stream restoration and we are happy to say that all will incorporate bioengineering techniques to the maximum degree possible — which is a win for both people and nature.

BOTH PAGES TOP Before and after photos of an eroding streambank on LaBarque Creek © Steve Herrington/TNC; TOP RIGHT Soil erosion on Elk River property over 20 years © Google Earth; BOTTOM RIGHT Before and after head cut restoration on Big River property © Steve Herrington/TNC



ELK RIVER, McDonald County

Along the Elk River in southwest Missouri, we are working with a private landowner with a 1,000-foot eroding streambank that is losing huge chunks of land every time it floods — amounting to an astonishing loss of 150,000 tons of soil in the past 20 years, as much as 1 ½ naval aircraft carriers. Working with DNR, and the statewide Soil and Water Conservation Program, the Conservancy will apply bioengineering solutions that will not only secure the land, but will also incorporate pools for fish habitat and native plants to hold soil and filter runoff.

Restoration is set to begin in late 2017 and will serve as an example for other potential sites along the Elk River and beyond.



BIG RIVER Washington County

In terms of stream restoration, head cuts are one of the most difficult challenges — head cuts are essentially an erosion feature where an abrupt, vertical drop moves upstream in the channel, carrying away tons of land in the process. A private landowner on the Big River had three aggressive head cuts on her property that needed to be addressed. Working again with DNR's Soil and Water Conservation Program, we aligned the landowner with a private stream restoration firm. They filled the head cuts, reshaped the area, and used bioengineering techniques for long-term stabilization.

Construction was completed in the summer of 2017, with plans for additional trees to be planted on the site later that fall. While the length of this restoration project was technically small, at only 50-feet, the area that is now secured with buffers and protected from grazing is a total of 4 acres — a win/win for nature and the landowner.

Each of these projects help demonstrate nature-based solutions that are critical to the toolkit of a sustainable Missouri. They mimic stable streams in more natural settings and how they resist extreme erosion. By incorporating deep and densely rooted vegetation, rarely used in rock-only projects, they provide the best chance for stabilizing eroding streams, improving water quality, and protecting land in the long-term.

“With the help of our supporters, we will continue focusing on these long term, nature-based solutions throughout Missouri,” said Herrington.



LEARN MORE about
these projects at
[nature.org/mofreshwater](https://www.nature.org/mofreshwater)

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The Nature Conservancy's Great Western Checkerboard Project in Montana. © Steven Gnam

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