MoBCI

Missouri Bird Conservation Initiative

Missouri Bird Conservation Initiative Grant Program
FY2028 Request for Proposals
Proposals due September 30, 2026, by 5:00pm CT
Work Period July 1, 2027 – June 30, 2028

Join us in our mission to conserve Missouri's bird populations! The Missouri Bird Conservation Initiative (MOBCI) is offering grants for impactful projects focusing on bird conservation and habitat enhancement across the state. Whether you are restoring native habitats or running community-based bird-focused programs, we want to support your efforts.

Our partnership with the Missouri Department of Conservation (MDC) and other MOBCI partners has enabled us to invite public and private organizations, non-profits, and Government entities to apply for up to $10,000 per proposal to help MOBCI further our mission of working together to conserve bird populations and their habitats.

Projects should benefit an array of bird species across Missouri's diverse habitats such as grasslands, forests, woodlands, wetlands and more. An acceptable project may target one or more high priority bird species, but should include benefits to other bird species, while also enhancing broader ecological health on the landscape. Projects should incorporate strategic habitat management and involve habitat and ecosystem-level planning and management while engaging partners with shared goals and objectives. Missouri's priority species are outlined in the Missouri Bird Conservation Plan's Technical Section on page 16. A checklist of Missouri species and communities of conservation concern can be found at Missouri's Species & Communities of Conservation Concern Checklist — bird species are listed on page 49. The Missouri Comprehensive Conservation Strategy also has a list of Species of Greatest Conservation Need (Appendix, H, starting on page 474). A list of the bird species in this table are on pages 516–521 of Appendix H.

We offer 2 different grant categories: a Natural Community/Habitat Grant based on MDC's Natural Community/Habitat Management Prioritized Landscape Tiers, and a Community Conservation and Engagement Grant that focuses on MDC's Community Conservation Tiers.

Contents

Natural Community/Habitat Grant

This grant category focuses on habitat restoration and protection in priority landscapes identified in Missouri's Comprehensive Conservation Strategy. These priority areas may also be designated Missouri Natural Areas. The grant prioritizes habitats based on the Conservation Opportunity Areas (COAs) identified in the 2022 State Wildlife Action Plan. This grant is focused on the restoration, reconstruction, enhancement, and protection of lands that are key for Missouri's native birds and reflect MOBCI's more traditional habitat projects. Outreach and education projects will not be funded under this opportunity. **Projects in a Tier 1 or Tier 2 priority landscape will be prioritized but projects in other tiers can still apply. See the Natural Community and Habitat Tiers found here.**

Community Conservation and Engagement Grant

This grant aims to involve communities in conservation efforts through habitat enhancement projects, educational programs, and sustainable practices.

Community Conservation is the process of engaging local governments, citizens, and private organizations within municipalities and adjacent areas to:

1. connect people with nature,
2. raise awareness of the community environmental and health benefits provided by healthy fish, forest, and wildlife resources,
3. promote conservation of natural resources through technical assistance, and
4. encourage development that protects native fish, forest, and wildlife diversity.

MOBCI hopes to reflect these principles in the Community Conservation and Engagement Grant while focusing on Missouri's birds' needs. Examples of projects include planting native tree species to help with heat islands while also providing habitat; encouraging participation in International Dark Skies programs; working with cities on sustainability planning, developing, and implementing programs to decrease window strikes; designing and implementing citizen science projects; encouraging sustainable urban agriculture; recruiting new birders, and/or delivering programs that promote landscaping with native plants. **Projects in a Tier 1 or Tier 2 priority landscape will be prioritized but projects in other tiers can still apply. See the Community Conservation Tiers found here.**

The MOBCI Grants Subcommittee can help answer any questions you may have about your project's eligibility for either grant opportunity. Please contact Neil Baalman at neil_baalman@fws.gov or Kristen Heath-Acre at kristen.heathacre@mdc.mo.gov with any questions after reading the Request For Proposals.

Eligible Projects

Projects should be designed to meet the needs of native birds across all habitats of Missouri and focus on MOBCI's priority areas. Each application should also include a brief plan encapsulated in a few paragraphs of how the area treated with grant funding will be maintained for the longevity of the project.

The Natural Community and Habitat Tiers can be found here from the Missouri Comprehensive Conservation Strategy. Eligible Projects may include habitat protection; habitat enhancement or implementation of Best Management Practices (BMPs); native habitat restoration or reconstruction; and other creative projects that effectively conserve native habitat for birds.

Community Conservation Tiers may be found here for this grant. Eligible Projects may include habitat protection; habitat enhancement; native habitat restoration or reconstruction; training events for bird conservation practices; addressing community identified resource concerns that negatively impact birds; and other creative projects that effectively conserve native bird populations.

Ineligible for Funding

MOBCI funds cannot assist applicants with administrative overhead costs or cover salaries. MOBCI funds may not be used for travel or lodging costs. Any indirect costs that are submitted as part of the direct request of funding are capped at 10% of the total requested funds. MOBCI funds may not be used to purchase equipment. Applicants may include their administrative overhead costs as match, provided it is directly related to the bird habitat improvement project or monitoring of the project being proposed through this current Request for Proposals. MOBCI will only provide funding for projects in which monitoring comprises 10% or less of the project costs. Outreach/Education projects are not eligible for the Natural Community/Habitat Grants.

Project Scoring

All projects will be scored by a team of reviewers to help determine awardees. Points will be awarded in the review process for projects that place a strong emphasis on partnerships as well as those that address habitats found in the priority landscapes. These landscapes are based on the Conservation Opportunity Areas (COAs) identified in the 2020 State Wildlife Action Plan: https://mdc.mo.gov/sites/default/files/2022-04/2022-Missouri-CCS.pdf. Project areas should be within a priority tier (e.g., priority geography, natural area, other COA, CCT). Please include the name of the geography and which tier it is within your proposal. Higher tiers equate to higher points.

Ranking Criteria

Natural Community/Priority Geography Grant

- **Priority and non-priority bird species** addressed in Appendix A (**15 points**)
- **Priority Tier & habitats conserved** (e.g., Tier 1 or 2; Priority Geography/Natural Area, Quail Restoration Landscapes, other COA, see interactive map link above)
    - **Tier 1, 20 pts**
    - **Tier 2, 15 pts**
    - **Tier 3, 10 pts**
    - **Tier 4, 5 pts**
- **Purpose of grant** (detailing goals & objectives) and project description/narrative (**15 points**)
- **Partnerships** (roles and contributions to the project of each partner listed should be clearly defined with partner organization contact information included)
    - **1 partner, 10 pts**
    - **2-3 partners, 20 pts**
    - **3+ partners, 30 pts**
- **Budget:** use a table format and include details such as costs for individual tasks by each partner and overall cost/acre (**15 points**)
- **Five-year Management Synopsis:** detailed description of how the project be managed, & who will be overseeing the work. **(10 points)**
- **Bonus** for an organization not previously funded through a MOBCI grant. (**5 points**)

Community Conservation and Engagement Grant

- **Priority Tier & habitats conserved** (e.g., Tier 1 or 2 in the CCT; see interactive map link above)
    - **Tier 1, 20 pts**
    - **Tier 2, 15 pts**
    - **Tier 3, 10 pts**
- **Purpose of grant** and future management (detailing goals and objectives and brief description of how project will be maintained) and project description/narrative (**25 points**)
- **Partnerships** (roles and contributions to the project of each partner listed should be clearly defined with partner organization contact information included)
    - **1 partner, 10 pts**
    - **2-3 partners, 20 pts**
    - **3+ partners, 30 pts**
- **Budget**: use a table format and include details such as costs for individual tasks by each partner and overall cost of the project (**15 points**)
- **Five-year Outreach Plan**: detailed description of plans to maintain or grow community engagement in the project **(10 points)**

- **Bonus** for an organization not previously funded through a MOBCI grant. (**5 points**)

Grant Awards & Match

Individual grant awards are available for a minimum award of $1,000 to a maximum award of $10,000 annually.

MOBCI grants require a one-to-one match of funds that DO NOT originate from the Missouri Department of Conservation (including Wildlife Diversity Funds, Habitat Challenge match, or any other Department sources). Both monetary and in-kind match are eligible. A monetary match contribution is only applicable as a match requirement once it is expended on a cost or activity identified in your work plan. In-kind match is a non-cash contribution of value provided by the project coordinating entity, such as the value of any donated real estate property, equipment, goods, or services contributed to a project that would have been paid for by recipient/subrecipient to complete the project.

The match may include, but is not limited to:

- Acquired realty, either fee title or an easement, for up to 50% of the requested funds Please see below for requirement details.
- Partner financial contributions, monetary or in-kind.
- Monitoring and evaluation costs, monetary or in-kind.
- Stewardship costs. This may include hiring a contractor, purchasing supplies, or renting equipment.
- Volunteer time. An hourly rate is applicable for all volunteer hours that are tracked. If your organization does not have a fixed volunteer rate, the current national rate for 2026 is $34.79/hr. (https://independentsector.org/resource/value-of-volunteer-time/)
- MOBCI is open to considering all forms of match that do not originate from MDC. If unsure of eligibility of match, please contact one of the grant administrators, Neil Baalman (neil_baalman@fws.gov) or Kristen Heath-Acre (kristen.heathacre@mdc.mo.gov) prior to submission of grant proposal.
- Projects which include a significant amount of overhead as match (i.e., indirect administrative expenses) are strongly discouraged.

Requirements for realty match:

Donated or acquired property or easements may be included as part of the project match for a maximum of 5 years if the following conditions are met:

- A copy of the appraisal is included (not included in the page length limit) to document the valuation (must be provided by a non-recipient of the property or easement).
- A table documenting each year and value that the property/easement has been used as match toward MOBCI funding, the cumulative value already used as match toward MOBCI funding, and

the current year's requested match provided by the property/easement to document the total use of the property/easement as match and relation to its total value (see example in Table 1).

- The property/easement may not be used as match if the cumulative value of the match claimed toward MOBCI projects exceeds the value of the property/easement.
- At least 50% of the match toward MOBCI funding should be from sources other than donated or acquired property or easements.

Match Plan Partner	**Proposal I**	**Proposal II**	**Proposal III**	**Proposal IV**	**Proposal V**	**Total $**
XYZ Easement	$12,500	$12,500	$12,500	$12,500	$12,500	$62,500
Totals	$62,500	$50,000	$37,500	$25,000	$12,500	$0

Table 1. An example of a spend-down table for the "XYZ Easement" valued at $62,500 used as match over five years.

Application and Review Process

Grant applications should include the information listed in the *General Requirements* section below to be considered eligible. The MOBCI Grants Subcommittee will review, score (based on the ranking criteria seen above) and provide funding recommendations to the MOBCI Steering Committee.

General Requirements

- Maximum length is seven pages for the entire proposal, including maps, and at least a 12-point font.
- **Grant Title**
- **Type of Grant**: habitat project or community conservation project
- **First Application for a MOBCI Grant**: yes or no
- **Purpose of Grant**: clearly define goals, objectives**,** or activities to be achieved with applicable timelines
- **Project Location Description**: attach maps and whether it is in MDC Tier (indicate Tier number) or not
- **Project Description**: narrative and any pertinent tabular information
- **Anticipated Acres Affected**: include explanation
- **Anticipated People Reached**: include explanation
- **Habitat Types, Birds, and Other Wildlife Benefited**: OR benefits of community outreach and involvement for bird conservation – described

- **Project Calendar**: include timelines for various aspects of the project (work period is July 1, 2027, through June 30, 2028)
- **Measurable Outcomes**: identify specific and measurable outcomes that will be used for tracking progress
- **Measurable Deliverables**: describe products or services that will be provided by the grantee
- **Reporting and Monitoring Plan**: describe process for monitoring and reporting progress and identify a point-of-contact with e-mail address
- **Five-Year Management Synopsis**: (for Habitat projects) will the project be managed, & who will be overseeing the work
- **Five-Year Outreach Synopsis**: (for Community projects) How will the local community be involved, & what methods of outreach will be employed? A sign recognizing the source of funding is requested MOBCI/MDC.
- **Lead Organization**: provide names, titles, addresses, electronic addresses, and phone numbers of parties to answer questions relating to the agreement; if applicable, include a list of NGO Board members and officers
- **Partners**: provide the same level of contact information as above for lead organization. Provide a brief and clearly defined role of each partner that has substantial involvement (i.e. funding contribution, in-kind support, etc.).
- **Fiscal Responsibility/Management**: describe fiscal management and identify grantee fiscal agent
- **Detailed Budget**: budget will include a table including Grant Request Amount and columns for funds requested from MOBCI and funds provided as matching dollars (see Table 2). Please include cost per acre on the budget table (if applicable). A detailed narrative of how the funding will be used is also necessary.
- Note- Mandatory Deliverables will include
    - 3-5 good quality digital pictures of project implementation,
    - 3-5 good quality digital pictures of completed project and/or event,
    - Reports must be sent to the contacts below, Neil Baalman and Kristen Heath- Acre.
    - Semi-annual and annual financial and progress reports are also mandatory deliverables

Task	MOBCI Funds Requested	Match Source & Amount	Total Costs
Cut and remove cedar trees	$7,500	$3,500 (paid by landowner)	$11,000
Burn crew		$2,500 (from partnership volunteer hours)	$2,500
Pre- and post-monitoring of birds		$1,500 (from Missouri University)	$1,500
Sum of Costs	$7,500	$7,500	$15,000
		Summary cost per acre: $200/acre	

Table 2. Sample budget table for restoring glade habitat.

Deadlines

All grant proposals **must be received by Jean Favara at jpouf1@swbell.net and Neil Baalman at neil_baalman@fws.gov no later than 5:00 p.m. September 30, 2026**.

Only electronic applications in pdf format of 7 pages will be accepted. Please type **"MOBCI GRANT PROPOSAL (Your organization's name)"** in the subject line of your submission email.

The MOBCI Grants Subcommittee will notify applicants of their status within three months of due date and indicate reasons for rejection and/or suggestions for making the proposal more competitive in the future.

Funding for MOBCI grants will be available in October, though delays are possible.

For Grant Assistance Contact:

Neil Baalman,
MOBCI Committee Chair
neil_baalman@fws.gov
Phone: 573-239-8056

Kristen Heath-Acre,
Wildlife Ecologist, Ornithologist
Missouri Department of Conservation
Kristen.HeathAcre@mdc.mo.gov
Phone: 573-522-4115 ext.3262

To learn more about MOBCI go to www.mobci.net

Appendix A: Missouri Bird Conservation Plan's priority bird species.

Natural Community	Common Name	MO Concern Score[1]	Population Trend, MO	Threats to Breeding, MO	Relative Density - Breeding, MO	Population Size, Global	Breeding Distribution, Global
GRASSLAND BIRDS	Eastern Kingbird	15	5	3	4	2	1
	Grasshopper Sparrow	15	5	4	3	2	1
	Henslow's Sparrow	17	2	4	5	4	2
	Bobolink	11	1	4	2	2	2
	Eastern Meadowlark	17	5	4	5	2	1
	Dickcissel	16	4	3	5	2	2
SAVANNA, WOODLAND, AND YOUNG-FOREST BIRDS	Northern Bobwhite	16	5	4	4	2	1
	Yellow-billed Cuckoo	16	5	3	5	2	1
	Chuck-will's-widow	16	5	3	4	2	2
	Eastern Whip-poor-will	18	5	3	5	3	2
	Chimney Swift	16	5	4	4	2	1
	Red-headed Woodpecker	17	5	3	5	3	1
	Eastern Wood-Pewee	14	3	3	5	2	1
	Bewick's Wren	17	5	5	3	2	2
	Brown Thrasher	15	4	3	5	2	1
	Eastern Towhee	15	4	3	4	2	2
	Field Sparrow	17	5	3	5	2	2
	Yellow-breasted Chat	13	3	3	4	2	1
	Orchard Oriole	13	2	3	5	2	1
	Blue-winged Warbler	15	3	3	4	3	2
	Prairie Warbler	18	5	3	5	3	2
FOREST BIRDS	Blue Jay	14	4	3	4	2	1
	Wood Thrush	14	3	3	4	2	2
	Worm-eating Warbler	15	2	3	5	3	2
	Prothonotary Warbler	13	3	3	2	3	2
	Kentucky Warbler	15	2	3	5	3	2
	Cerulean Warbler	18	5	4	4	3	2
WETLAND BIRDS	Green Heron	15	5	3	3	3	1
GENERALIST BIRDS	Common Grackle	16	5	4	5	1	1
SPECIAL CIRCUMSTANCE BIRDS[2]	Ruffed Grouse	-					
	Greater Prairie-Chicken	-					
	King Rail	-					
	Bachman's Sparrow	-					
	Brown-headed Nuthatch *extirpated	-					

[1] MO Concern Score = sum of other five scores: MO Population Trend, MO Threats to Breeding, MO Relative Density, Global Population Size, and Global Distribution.

[2] Special Circumstance Birds were not scored due to extremely low breeding populations caused by various circumstances. See SPECIAL CIRCUMSTANCE BIRDS section of the Missouri Conservation Bird Plan for more info.

Appendix B: Sample Community Conservation Grant

Natural light and darkness as a Natural Resource

A **Community Conservation and Engagement grant proposal** outlining programs to engage communities in valuing natural lighting as a natural resource[1]

LEAD ORGANIZATION: DarkSky Missouri.
POINT OF CONTACT: Vayujeet Gokhale, Chair, DarkSky Missouri.
Address:100 E. Normal Street, Kirksville, Mo – 63501.
email: gokhale@truman.edu
Phone: 660-785-4594

Purpose of Grant

We request funding to continue programs that highlight the importance of maintaining and restoring the natural level and color balance of lighting in our outdoor nighttime environment. In particular, our programs will continue to highlight the severe ecological concerns related to the excessive use of blue-white colored and extremely bright LED lights mounted on badly designed light fixtures. These deleterious effects include the destruction of nocturnal habitats and interfering with bird migration, foraging, and nesting. Feedback gained during the design and implementation of projects supported by the FY2025 MOBCI cycle will be used to enhance and improve this project. Grant funding will be use to strengthen, deepen and expand collaborations established in FY2025 to help raise awareness and promote conservation of one of the most underrated and precious natural resource: darkness at night. Project goals include enhancing programs that provide opportunities for the public to participate in nighttime nature walks and stargazing, increased awareness about the importance of darkness at night and harm caused by irresponsible outdoor lighting, improving lighting around local pollinator gardens and residential areas, and improving lighting and implementing mitigation strategies to reduce bird-collisions with human-made structures.

Participant Volunteers:

1) Vayujeet Gokhale, PhD, Professor of Physics & Astronomy, Truman State University, **Kirksville**
2) Stephanie Todd, Missouri Sierra Club, **Saint Louis**
3) Don Ficken, Lights Out Heartland, **Saint Louis**
4) DeAnn Gregory, Lakeside Nature Center, **Kansas City**
5) Loring Bullard, Ozark Society, **Springfield**
6) ***To be decided,*** Missouri Master Naturalist, Boone's Lick Chapter, **Columbia**

Project Location(s)

Due to the pervasive influence of light pollution across our state and beyond (light domes from a city the size of Saint Louis can be seen from as far as 200 miles away!), we have intentionally structured this project to be implemented at various locations across the state (see Figure I below). Each of these regions have opportunities to engage audiences in Tier I Community Conservation Tiers. It should be noted that due to the very nature of the problem we are trying to highlight (light pollution), the scope of our conservation and engagement efforts extends well beyond a particular park, wilderness area or city.

[1] *This proposal is essentially a continuation of the work we have proposed in the FY 2025 MOBCI grant proposal. Consequently, much of the language, goals, and outcomes are the same as our previous proposal.*

Figure I: Map showing the project target areas according to CCT: Tier I (red), Tier II (yellow), and Tier III (green). Downtown Kirksville, Lakeside Nature Center, and Missouri State all are located in Tier I, whilst Forest Park and Olivette are located in Tier II. Note that the anticipated impact of our engagement and conservation programs extends well beyond the locations of our participating organizations.

Perspective

At any given moment, half of the Earth's surface is experiencing night. Electrification and industrialization have radically altered the night and the ecological balance in our environment[2]. Today, more than 80% of the world's population and 99% of North Americans, live under light polluted skies. Dark skies around rural areas are increasingly light polluted due to urban sprawl and the proliferation of warehouses, oil-fields, and greenhouses[3]. For this reason, bird migration paths must necessarily cross vast areas affected by light pollution. Excessive and misdirected outdoor lighting disturbs the ecological balance in the environment by adversely impacting these migratory birds[4], and insects[5]. There is growing consensus among scientists to maintain dark-sky conditions in remote areas to benefit wildlife, and to reverse our bad outdoor lighting habits in towns and cities to benefit humans (as well as animals and plants). Both efforts will require public engagement and implementation of wisely crafted light ordinances to resolve.

DarkSky Missouri (DSM from here on) has positioned itself on the forefront of raising awareness about light pollution and advocating for implementation of responsible lighting at night. Among the many activities DSM has been engaged in over the past few years, one of the most prominent ones has been the *Lights Out Heartland* program that is particularly focused at reducing light pollution during bird migration. It is becoming increasingly evident that every year several hundred million birds die due to collisions, and a significant fraction of this can be attributed to the disorientation these birds experience as a result of light pollution.

This project aims to bridge the gap between the global extent of the light pollution problem and the relative absence of the awareness of the affects on birds and native habitat. We will also highlight straightforward solutions that address this problem. We plan on leveraging already existing conservation efforts and networks (such as those facilitated by MDC, Missouri Master Naturalists, and non-profits such as the Sierra Club and the Audubon Society).

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[2] https://www.theatlantic.com/science/archive/2019/09/light-pollution-destroying-environment/598561/
[3] https://www.citylab.com/environment/2020/02/light-pollution-rural-america-star-gazing/606139/
[4] https://www.fws.gov/story/2022-04/dim-lights-birds-night
[5] https://www.theguardian.com/environment/2019/nov/22/light-pollution-insect-apocalypse

Birds and Light Pollution

Many recent studies (see Cabrera-Cruz et al., 2018, and Horton et al., 2018, for example) have indicated that due to a combination of geography and light pollution, cities in the Midwest are of particular peril for migratory birds (see Figure II). High-rise buildings (taller than 3 floors) are usually most hazardous, though given their small number, contribute to about 508,000 deaths[6]. Buildings between 4 and 11 floors, contribute to almost 339 million bird collision deaths. Even smaller buildings, due to the sheer large number of them, contribute significantly to bird fatalities – it is estimated that close to 253 million birds die as a result of collisions with buildings one to three floors high. As LED lights become increasingly popular, the increased glare and skyglow is expected to increase bird disorientation, which in turn, is expected to contribute even more to bird-collision fatalities. Similar calamities await other animals, including insects: particularly pollinators, including birds, and marine lifeforms in rivers, ponds, and lakes.

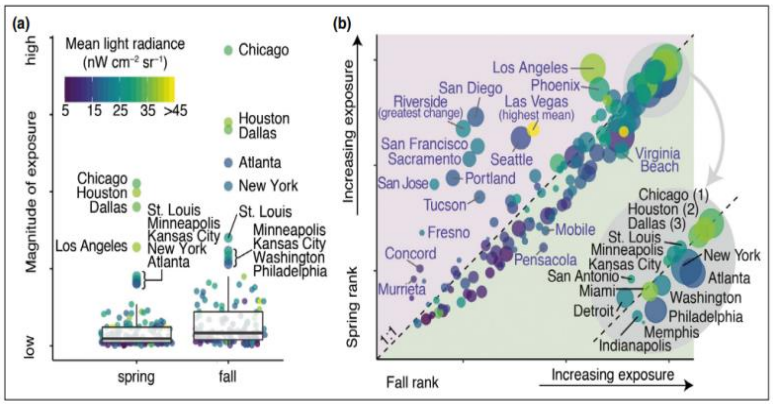


Figure II: Seasonal (a) magnitude and (b) relative rankings of the 125 largest urban areas in the continental US. Point color shaded by the mean light radiance and sizes (in [b]) are scaled by the square root of urban area. Inset in (b) depicts the top 15 (spring or fall) rankings (From Horton et al., 2018).

Thus, maintaining the natural conditions at night will benefit birds, insects, humans, aquatic species, and indeed the entire ecosystem in direct and indirect ways. Most migratory bird species, nocturnal or not, migrate at night. Many species have evolved in a manner that is attuned to the darkness at night and to the periodic increase and decrease in moonlight corresponding to the lunar cycle. The introduction of Artificial Light at Night (ALAN) is seriously altering these natural rhythms, a problem getting increasingly worse due to the introduction of cheap, highly efficient LED lights. It is evident that the LED technological breakthrough has led to an increase in levels of outdoor lights that has made skyglow and glare even worse than before. Additionally, the short wavelength blue light that these LEDs emit is particularly harmful to most life forms, since blue light is a trigger for daytime activities.

Priority Bird Species Impacted

This Community Conservation and Engagement grant would benefit priority bird species such as the nocturnal Eastern Whip-poor-will and nocturnal migrants such as the Bobolink, Prairie Warbler, and Cerulian Warbler. In terms of Habitat priority tiers: Columbia, Kirksville, Springfield will benefit Tier II & Tier III regions, whilst the Kansas City and Saint Louis locations will benefit Tier III areas along the Missouri & Mississippi rivers.

[6] https://abcbirds.org/blog/truth-about-birds-and-glass-collisions/

Partnerships

Since the launch of DarkSky Missouri in October 2018, we have actively worked towards forging meaningful and consequential partnerships with organizations that share some of our core values. In particular, we have invested a significant amount of effort is establishing a *Lights Out Heartland* program across several states. One of the outcomes of this project is to strengthen some of these ties by developing targeted and effective dark-sky programs that include demonstration-kits and displays, handouts and brochures relevant to the various constituencies involved. In particular, we want to develop programs that not only are effective with the general public, but also with park & city administrators and business owners that usually control and make decisions about outdoor lighting. Our current partners include the Saint Louis Audubon Society's of Kansas City and Saint Louis, the Sierra Club, the Missouri River Bird Observatory, several chapters of Missouri Master Naturalists, and many others (please see: https://www.lightsoutheartland.org/about). More specifically, in the table below, we list our partners in this Community Conservation and Engagement Effort:

Location	Partner	Tier	Comments
Kirksville	Truman State	I	1000-hills UNSP (dark sky) designation
Saint Louis	Lights Out Heartland, Sierra Club	II	Forest Park, schools, and businesses
Kansas City	Lakeside Nature Center	I	Public outreach and schools in metro area
Springfield	Ozark Society	I	Springfield South Creek restoration
Columbia	Boone's Lick MMNs	I, II	Public outreach and schools in the area

Table 1: Proposed locations for engagement with city and school administrators and other members of the community to create awareness about harmful effects of ALAN on birds and other lifeforms

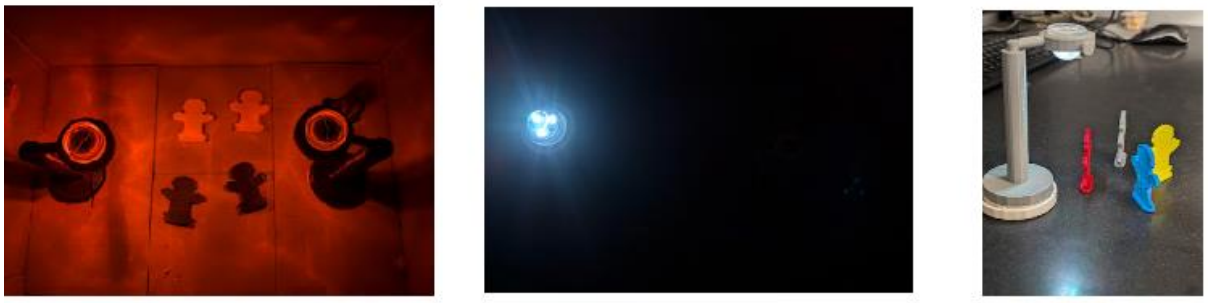


Figure III: Left panel: Lighting Demo showing well directed and well shielded lighting illuminating the ground and causing minimal glare. Middle panel: When the LED is pointed upward, practically nothing on the ground is visible. Right: Picture showing the 3D printed LED lamp-post, lighting fixture, and different colored toy-figures. These demos are effective is demonstrating the effects of glare, and the color rendition of different colored LED lights.

Project Description

We are requesting funding through this "Community Conservation and Engagement Grant" opportunity to accomplish the following:

1) Continue distribution of the "**dark sky demonstration kit**" to illustrate responsible use of outdoor lighting and the harmful effects of bad lighting,
2) Devices such as **audiomoths, night vision goggles, and sky quality meters** that help audiences appreciate nocturnal bird activity and its connection with night time lighting practices,

3) Design appropriate **signage, display banners, and brochures** that provide simple step-by-step recipes to implement darks sky friendly solutions and,
4) Strengthen existing **partnerships, and initiate new ones,** with individuals, programs, and organizations that share our values regarding personal freedoms, civic responsibilities, and environmental wellbeing.

We now describe each of these elements, and how they connect to our overall objective of engaging the audience in appreciating the value of natural lighting. The budget is summarized in Table III on the last page of this proposal.

1) **Dark Sky Demonstration kit**: Based on our experiences about what audiences generally find most interesting, informative, and attractive, we plan on putting together a kit that will comprise:

a. **Demonstrating Glare and benefits of a well-designed light fixture**: Some of the requested funds to be used in 3-D printing or/and special ordering the components for these demos. Demos designed using funds from FY2025 (See Figure III) will be improved based on experience and feedback. [**Cost: About $10 per item.**]

b. **Demonstrating differences in amber, white, and blue lighting**: Our demo-kit will contain color-changing LED lights and a diffraction grating (essentially a plastic prism-plate the size of a postage stamp) to demonstrate the properties of light. In particular, the demo will illustrate how red or amber lights are least disruptive to human vision, and how jarring blue-white light from LEDs is. [**Cost: About $10.**]

2) **Devices to measure nocturnal bird activity:** *Lights Out Heartland* has begun using nighttime instruments that help create awareness about bird activity in neighborhoods in the Saint Louis area. This includes the use of devices called audiomoths[7] that record audio signals from birds such as owls, American Crow, Yellow-rumped Warbler, Common Yellowthroat, White-breasted Nuthatch, Black-capped Chickadee, and many more. Funds from the MOBCI grant will be used to purchase a set of audiomoths which will be installed near prominent locations (MDC office or local park), with recordings and a list of identified birds displayed on monitors and on social media. Similarly, the nighttime goggles will help users on nightwalks and/or at stargazing events to "see" birds and other nocturnal critters that will help them gain appreciation of the extent of activity during "dark hours". User-instruction documents will also be produced and made available freely on our website for others to use. [**Total cost: $1,000**]

3) **Signage, display banners, and brochures**: The demos mentioned above will complement the content of the displays, posters, handouts, and brochures we plan on printing with the funds from this proposed project. Some of these materials will be specifically designed to address the harm caused to birds (for example, due to collisions) by bad lighting. That is, these materials will contain information about WHY we need better shielded lights in our community and parks, and how bad lights (in terms of intensity, directionality and color) are harmful to the environment, particularly birds and pollinators. These artifacts (electronic high-resolution pdf files, see Fig. IV) will be made available to our partner organizations along with a slide deck presentations for future use. [**Total paper & printing costs: $500 = $500 (MOBCI) + 500 (DSM)**].

[7] https://www.openacousticdevices.info/audiomoth

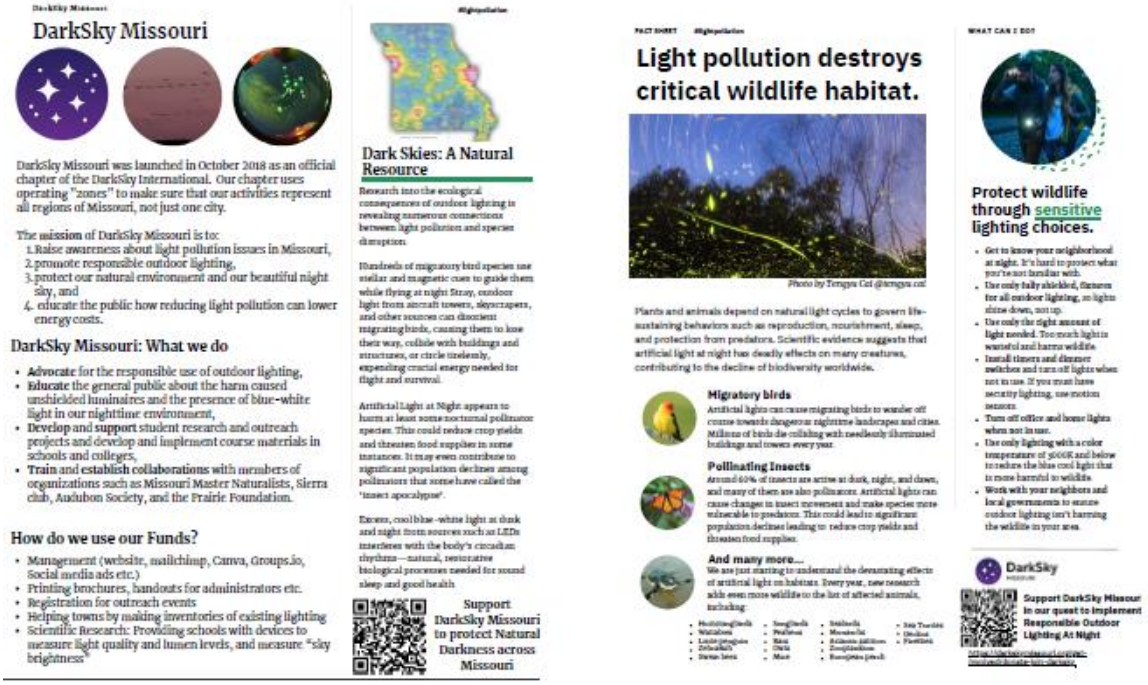


Figure IV: Examples of newly designed handouts explaining DSM's activities and achievements (left panel) and another handout explaining why light pollution is not just a nuisance but an existential threat to many lifeforms (right panel).

4) **Partnerships:** We will conduct at least ten events (at least two events in the Fall of 2024 and two in Spring 2025) at each of the locations described in Table I above. These events will be developed in coordination with our partner organization and the generated artifacts will be made to address the needs of those communities vis-à-vis outdoor lighting, and how it impacts birds and other animals.[**Volunteer time: $2,000.**]

Measurable Outcomes

1) Establish and enhance night-walk and stargazing programs at the proposed locations,
2) Increased interest in evening and night-time nature walks and stargazing events,
3) Increased awareness about the importance of darkness at night and harm caused by ALAN,
4) Increased awareness about the importance of reducing (and possibly eliminating) use of blue-white outdoor lighting in communities and parks and,
5) Increased awareness about the direct connection between light pollution and the welfare of migratory birds.

Measurable Deliverables

1) Regular progress reports,
2) 5 or more high quality images of project implementation,
3) 5 or more high quality images of completed projects and events,
4) How-to-do instructions for lighting demonstrations described in "Project Description" and,
5) Electronic high resolution versions of artifacts (brochures etc.) generated as a result of this project.

Reporting and Monitoring Plan

We plan on generating at least two project progress report (in December 2025 and May 2026, see Table II) along with our final report. Reports will include summaries of community events, survey data generated from audience surveys, images and any artwork resulting from these events, a finance report outlining expenditures, and progress on putting together the 'dark sky kit'. Additional reporting will be done, as needed. Reports will be compiled and submitted by Vayujeet Gokhale (gokhale@truman.edu).

Project Calendar

Time Frame	Activity/Event	Comments
July 2025	Zoom meeting with volunteers & partners; Order or design parts and begin developing demo kits for outreach, Survey rubric to gauge audience before/after attitudes	Designate responsibilities, decide future meeting schedule, set up communication protocols and resources (eg. Google drive);Identify locations and do groundwork to organize events in community
Fall 2025	Outreach events (at least 8 events)	Highlight Fall bird migration (September-November)
December 15th	Progress Report I	Feedback from Fall outreach events, plans for Spring events; status of demo-kits and outreach materials.
Jan 2026	Zoom meeting with volunteers & partners	Review status, plan and organize future events
Spring 2026	Implementation of Demo's and other artifacts during outreach events (7+ events)	Highlight Spring bird migration (April-June)
May 15th 2026	Progress Report II	Solicit feedback from partner organizations; start final report and accumulating artifacts for submission
June 30th 2026	Final Report	

Table II: Proposed Project Calendar

Fiscal Responsibility Management

Don Ficken (donaldficken@sbcglobal.net), treasurer of DarkSky Missouri, will be responsible for managing the fiscal aspects of the grant. Grant expenses will be reported during our periodic reports during meetings with partners. Any planned expense will have to be pre-approved by the PI (Dr. Gokhale) and Mr. Ficken.

Project Budget

Please see "Project Description" section above for a detailed narrative on use of these funds.

From MOBCI			DSM Match		
Item	#	Requested Amount	Item	#	Match Amount
Demo kits exemplifying "good" and "bad" lighting	20	$500	Printing cards, brochures, handouts	500	$500
Devices to observe birds in nighttime environment (audiomoths, night time goggles, Sky Quality Meters)	10	$1,000	Volunteer time[5 DSM volunteers, approx. seven two hour events per year @$31.80/hr]		$2,000
Display supplies (banners, posters, etc.)	20	$500			
Miscellaneous (S&H, giveaways, registration fees, Refreshments etc.)	*	$500			
Total		**$2500**	**Match Total**		**$2,500**

Table III: Requested equipment with cost estimates.

Appendix C: Sample Habitat Restoration Grant

Missouri Bird Conservation Initiative FY26 Natural Community/Habitat Grant Proposal from the Missouri Prairie Foundation (MPF)
Submitted 30 September 2024

Grant Title: Bird Habitat Enhancement in the Hi Lonesome Priority Geography/Audubon Important Bird Area (Tier 1 Area) and the Golden Grasslands Priority Geography/Golden Grasslands Audubon Important Bird Area (Tier 1 Area)

Purpose of Grant: To fund the following management activities to enhance prairie and native grassland for grassland birds: continued tree and undesirable brush removal from prairie swales at Morton Family Prairie, tall fescue (*Festuca arundinacea*) treatment at Morton Family Prairie, tree and brush removal at MPF's Coyne Prairie and the adjacent Snadon Prairie, and Japanese honeysuckle (*Lonicera japonica*) treatment in a prairie swale that runs through the two prairies in Dade County.

Project Location (all within Tier 1 areas)**:**
The 80-acre **Snadon Prairie** (to be purchased by MPF by early 2025*) is located between MPF's Coyne and Penn-Sylvania prairies, immediately northeast of the Missouri Department of Conservation's (MDC's) Sons Creek Conservation Area – Berrier Tract and ½ mile southeast of Niawathe Prairie Conservation Area. The latitude and longitude of the property is 37°30'07.1"N 93°59'29.0"W.

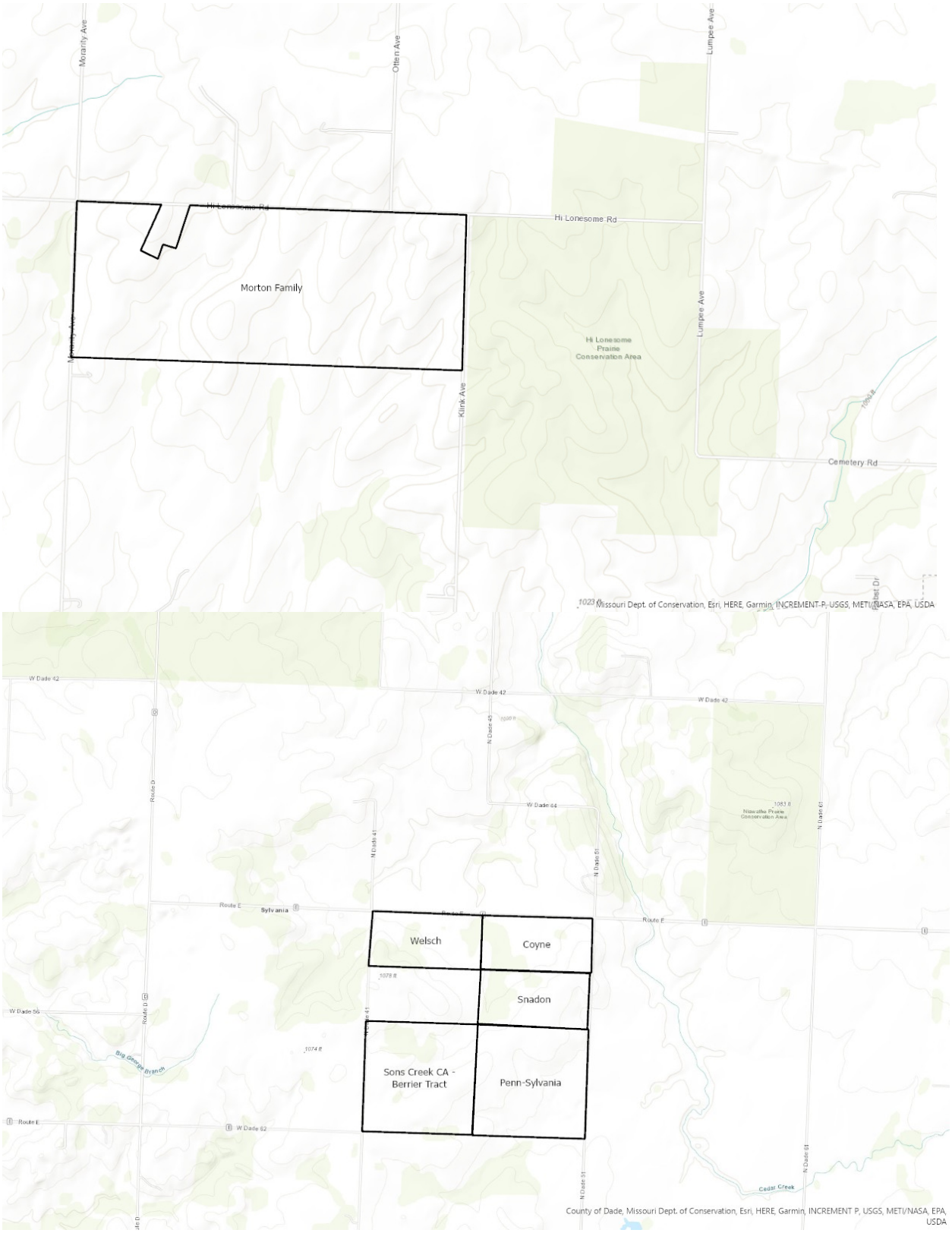
The 80-acre **Coyne Prairie** is located immediately north of Snadon Prairie listed above. Both Snadon Prairie and Coyne Prairie are in the Golden Grasslands Priority Geography/Audubon Important Bird Area. The latitude and longitude of the property is 37°30'18.7"N 93°59'26.8"W.

The 380-acre **Morton Family Prairie** is located immediately west of MDC's Hi Lonesome Prairie in the Hi-Lonesome Priority Geography and the Cole Camp Audubon Important Bird Area. The latitude and longitude of the property is 38°28'49.9"N 93°14'25.0"W.

Coyne and Snadon Prairies are dry-mesic sandstone/shale prairie natural communities and include a segment of a prairie headwater stream and a rare prairie swale.

Morton Family Prairie is 380 acres, at least 178 acres of which comprise a largely intact, diverse prairie remnant with populations of Mead's milkweed as well as the regal fritillary butterfly.

Figure 1: See below maps for project locations.



Is this the first time you have submitted a MoBCI grant proposal: No

Project Description: MPF requests $25,000.00 to conduct the following specific prairie restoration activities on the above-listed prairies:

- Completed tree and brush removal on Morton Family Prairie.
- Tall fescue treatment on a portion of Morton Family Prairie.
- Tree and brush removal from a prairie swale on Snadon and Coyne prairies.
- Japanese honeysuckle treatment around a prairie swale on Snadon and Coyne prairies.

Project Site Maps:

Figure 1. Morton Family Prairie: Fescue treatment in crosshatched area and tree removal is outlined in yellow. The two wooded draws to the east of the areas in yellow are being cleared of brush in fall/winter 2024, thanks to an FY25 MoBCI grant.

Figure 2: Coyne and Snadon prairies: Tree removal and Japanese honeysuckle treatment outlined in yellow.

** As of September 30, 2024, the Snadon family has offered to sell the 80-acre tract to MPF, which was the wish of the late Julian Snadon. MPF is currently having the land appraised and will soon make an offer on the land. Given the extremely high conservation value of this tract and that MPF places a high priority on its protection, and that donors have donated adequate funds restricted to land acquisition to MPF, we have very high confidence that MPF will own this property no later than early 2026. If for some reason the purchase does not go through, we are certain that the Snadon family would allow habitat improvements on the prairie.*

Project Calendar:
• July 1, 2025, begin tree and brush removal on Morton Family as well as Coyne and Snadon prairies.
• Fall 2025, after a frost, treat tall fescue on Morton Family Prairie.
• Fall/early winter 2025, treat Japanese honeysuckle on Snadon and Coyne prairies.
• Winter 2025/2026, MPF partner workday to remove isolated trees from the open acres at Morton Family Prairie.

Measurable Outcomes of Work This Grant Addresses:
• Tall fescue eradicated from 71 acres of remnant prairie.
•Trees and brush removed from 36 acres of prairie on three sites and two tier 1 geographies.
• Japanese honeysuckle eradicated from 11 acres of prairie swale.

During the grant period timeframe, MPF will organize a workday, inviting students who are part of the Conservation Federation of Missouri's Conservation Leadership Corps (CLC) and Greater Ozarks Audubon Society's Green Leadership Academy for Diverse Ecosystems (GLADE), as well as members of Missouri Master Naturalists (MMN) to remove isolated trees from the open acres at Morton Family Prairie.

Measurable Deliverables:
MPF will facilitate and oversee all the above prairie restoration work. MPF will provide all required reporting of grant activities and measurable outcomes, including photo documentation.

Grant Request Amount: $25,000.00

Budget:

MoBCI FY26 budget				
Expense	**Grant Request**	**Matching Funds**	**In-kind Contributions**	**Total Budget**
Fescue Treatment - Morton Family (71 acres)		$2,130 (MPF)		$2,130
Tree/Brush Removal - Morton Family (25 acres)	$20,000	$5,000 (MPF)		$25,000

Tree/Brush Removal - Morton Family (Isolated open acres trees) (CLC/ GLADE/MMN Workday) (10 people – 8 hours – $31.80/hour)			$2,544 (CLC, GLADE, MMN)	$2,544
Tree/Brush Removal - Snadon & Coyne (11 acres)	$5,000	$2,000 (MPF)		$7,000
Japanese Honeysuckle Treatment - Snadon & Coyne (11 acres)		$1,100 (MPF)		$1,100
Value of Morton Family Prairie		$12,500 (MPF)**		$12,500
Total	$25,000	$22,730.00	$2,544	$50,274

Spend down for Morton Family Prairie value used as match:**

Match Partner	**FY26 MoBCI proposal**			
Morton Family Prairie	**$12,500**			
Totals	**$1.904M**			

**See attached appraisal for the value of Morton Family Prairie, donated to MPF in 2023.

Reporting and Monitoring Plan: Grant reporting will be completed according to MoBCI timetable and deadlines. Breeding grassland bird surveying will take place by the end of the grant period.

Lead Organization: Missouri Prairie Foundation, P.O. Box 200, Columbia, MO 65205

Lead Contact: Jerod Huebner, MPF Director of Prairie Management, 4311 Par Lane, Joplin, MO 64804. jerod.huebner@gmail.com Cell: 417-414-4700

Partners: CLC, MMN, GLADE

Fiscal Responsibility/Management: MPF will act as the fiscal agent for the grant.

Habitat Types and Wildlife Benefited:
Snadon and Coyne prairies contain at least two natural communities of conservation concern: Dry-Mesic Sandstone/Shale Prairie: S2 and Prairie Swale: S2. Coyne Prairie supports 174 native plant species with an average CC value of 4.54 and 27 remnant-dependent plant species. The Missouri River Bird Observatory's 2020 Breeding Bird Surveys on Missouri Prairie Foundation Properties reported northern bobwhite, Henslow's sparrows, common yellowthroats, dickcissels, Bell's vireos, and eastern meadowlarks at Coyne Prairie during the breeding season, and birders have noted Lapland longspurs here in winter. In 2023, a burrowing owl was observed at Coyne Prairie while a staff and board member were conducting crawfish frog breeding surveys, which are abundant in surrounding ponds. The complex of prairies and grassland within 2.5 miles of Snadon and Coyne prairies comprises 1,600 acres owned by MDC, 160 owned by The Nature Conservancy, and 320 owned by MPF.

Morton Family Prairie is a dry-mesic chert prairie with at least 178 acres of unplowed, remnant tallgrass prairie. Surveys prior to MPF's acquisition of this prairie in late 2023 revealed Morton Family Prairie supports at least 79 native plant species with an average native CC value of 4.84, and 15 species with a CC value of 7 and higher. Thus far, this prairie has been found to support three species of conservation concern: Mead's milkweed (*Asclepias meadii*), the regal fritillary butterfly (*Speyeria idalia*), the prairie mole cricket (*Gryllotalpa major*). Additional surveys will likely increase these numbers significantly. Immediately east of Morton Family Prairie is MDC's Hi-Lonesome Prairie, and Mora Conservation Area is approximately 1.5 miles northeast. There are also numerous smaller, privately owned prairie remnants in the immediate vicinity.

The 2015–2020 Grassland Bird Surveys in Missouri's Priority Geographies by Missouri River Bird Observatory includes the following list of bird species detected the for Cole Camp Prairies Conservation Opportunity Area (which includes Morton Family Prairie): Bell's vireo, dickcissel, eastern meadowlark, common nighthawk, upland sandpiper, sedge wren, grasshopper sparrow, and loggerhead shrike. The report documents sightings of 187 grassland birds at Morton Family Prairie.

This project aims to restore and conserve prairie natural communities, which will in turn enhance habitat structure and invertebrate abundance and diversity to benefit prairie priority birds identified in the Partners in Flight Bird Conservation Plan for The Osage Plains (Fitzgerald et al. 2010) as declining in the Osage Plains: Henslow's sparrow, greater prairie-chicken, Dickcissel, Grasshopper Sparrow, Field Sparrow, Loggerhead Shrike, Scissor-tailed Flycatcher, Bell's vireo, and northern bobwhite. While many grassland birds require woody vegetation structure (e.g., Bell's vireos and isolated trees; northern bobwhite and isolated shrubs), which MPF manages for, widespread, aggressive brush and other woody growth degrades native grassland herbaceous plant habitat that is crucial to the survival of many grassland birds, such as Henslow's sparrows (Herkert 2019).

Public Benefits: Ecologists rank temperate grasslands—which include Missouri's tallgrass prairies—as the ***least conserved, most threatened*** major terrestrial habitat type on earth. Biologically diverse prairie is part of Missouri's natural heritage—and of the nation and the world. It is our responsibility to conserve it for the enjoyment of future generations. Improved prairie habitat

conditions at these three sites for declining grassland bird species will benefit the large birding public who will have greater opportunities for wildlife viewing on the three publicly accessible sites in this proposal. Habitat for northern bobwhite populations is expected to increase with habitat improvements, thereby enhancing quail hunting opportunities in the area with increased nesting and brood-rearing success of these grassland birds.

Recent evidence suggests that soils of native tallgrass prairie can sequester as much carbon as tropical rainforest. Research conducted on Kansas' Konza Prairie, a prairie of similar landforms and floral attributes as those of the prairies in this proposal, proved that the high biomass produced on the prairie above and below ground was responsible for significant carbon loading in the soil. Approximately 60–80% of the biomass responsible for carbon sequestration is located below ground (Rice 2002). Conservation of prairie vegetation will have direct though non-quantified impacts on atmospheric levels of carbon. In addition, intact prairie—with its long-rooted native plants—plays a significant role in maintaining water quality in streams and directing water underground, helping to replenish groundwater quantities.

Literature Cited:

Fitzgerald, J. et al. 2010. Partners in Flight bird conservation plan for the Osage Plains. Version 1.0. On-line version accessed February 2012.

Herkert, J.R. The Effects of Management Practices on Grassland Birds—Henslow's Sparrow (*Centronyx henslowii*), Chapter II of The Effects of Management Practices on Grassland Birds Edited by D.H. Johnson, L. D. Igl, J. A. Shaffer, and J.P. DeLong. Professional Paper 1842–II U.S. Department of the Interior U.S. Geological Survey.

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Ripper, D. and E. Duke. 2020. 2020 Breeding Surveys on Missouri Prairie Foundation Properties. moprairie.org/project/coyne-prairie/

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