Environment and Natural Resources Trust Fund 2020 Request for Proposals (RFP)

ENRTF ID: 212-F **Project Title:** Saving Endangered Pollinators through Data-driven Prairie Restoration F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat Category: Sub-Category: Total Project Budget: \$ 1.024.915 **Proposed Project Time Period for the Funding Requested:** June 30, 2024 (4 vrs) Summary: Minnesota Zoo, Parks, and TNC will use prairie restorations and Endangered Dakota skipper reintroductions to study factors supporting butterflies and develop foundational habitat management recommendations for -Minnesotas imperiled prairie butterflies. Name: Erik Runquist Sponsoring Organization: Minnesota Zoo Job Title: Dr. Department: Address: 13000 Zoo Blvd Apple Valley MN 55124 **Telephone Number:** (952) 431-9562 Email Erik.Runguist@state.mn.us Web Address: Location: Region: Central, Metro, Northwest, Southwest County Name: Clay, Dakota, Lincoln, Pipestone, Pope, Ramsev

City / Township:

Alternate Text for Visual:

Dakota Skippers, and many other prairie butterflies, have disappeared from much of Minnesota. Identifying how to best enhance habitat, such as increasing native purple coneflowers, is needed to sustain populations.

Funding Priorities Multiple Benefits Outco	omes Knowledge Base
Extent of Impact Innovation Scientific/Tec	ch Basis Urgency
Capacity ReadinessLeverage	TOTAL%

PROJECT TITLE: Saving Endangered Pollinators through Data-driven Prairie Restoration

I. PROJECT STATEMENT

Goals: The Minnesota Zoo, DNR's Division of State Parks and Trails, and The Nature Conservancy (TNC) will develop a unique conservation research partnership to help save Minnesota's endangered prairie butterflies by:

- 1) Assessing factors associated with the disappearance of imperiled Minnesota prairie butterflies.
- 2) Restoring prairie at Glacial Lakes State Park to support endangered butterflies and other pollinators.
- 3) Reintroducing the US-Threatened/MN-Endangered Dakota skipper butterfly from the Zoo to TNC's Hole-inthe-Mountain Prairie Preserve (HIMPP) and Glacial Lakes State Park, where, until recently, it was common.
- 4) Developing foundational habitat management recommendations to sustain Dakota skipper populations.
- 5) Supporting Federal and State and Recovery plants and Risk Assessments for the Dakota skipper through conservation rearing, breeding, and wild reintroductions.

Opportunity: Many of Minnesota's prairie butterflies are disappearing at alarming rates, with some in danger of global extinction. Recovery of these pollinators depends on efforts to return them to prairies where they have disappeared and to manage habitat to promote their successful reestablishment.

Actions: We will help reestablish recently lost populations of Minnesota Endangered butterflies through reintroductions, habitat improvements, and advancing our understanding of what is needed to save them. We hypothesize that decreases in the Dakota skipper's preferred nectar plant (narrow-leaved purple coneflower) contributed to their recent extinction at sites like Glacial Lakes State Park, where pesticide drift and other external threats appear to be lower. We will study how reintroduced Dakota skippers respond to prairie wildflower augmentations and/or manipulations at Glacial Lakes and HIMPP, the latter of which already has high densities of blooming coneflower. Our work will help develop a management toolkit for restoring lost prairie butterfly populations, identifying additional reintroduction locations, and helping to remove Dakota skippers from the U.S. Threatened Species list. We will help satisfy MS 86A.05 subd. 2(c) to "reestablish desirable plants and animals that were formerly indigenous to the park area but are now missing", the Minnesota Zoo's statutory role as a Pollinator Bank for the State of Minnesota (MS 85A.02 subd. 2), as well as the goals of the Minnesota Prairie Conservation Plan, Minnesota State Wildlife Action Plan, and Monarch Joint Venture. Prairie restoration at Glacial Lakes State Park will benefit all pollinators, wildlife, and the Park's 56,000+ annual visitors.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Enhancing Prairie at Glacial Lakes State Park for Pollinators

MN State Parks and Trails will restore and enhance native prairies at Glacial Lakes State Park for the reintroduction of Dakota skipper. This will be done by 1) experimentally manipulating the density, abundance, etc. of certain native flowers/grasses within the range of natural variation for those species locally, 2) controlling woody species encroaching into native prairie, and 3) increasing native wildflower and grass densities in remnant and reconstructed prairie.

ENRTF BUDGET: \$238,812

Outcome	Completion Date	
1. Establish plot locations/ design; plant 10,000 plugs of wildflower species known to be	November 2020	
important for Dakota skippers and other pollinators		
2. Finalize planning for experimental vegetation manipulation in established plots,	October 2021	
implement year-1 manipulations		
3. Diversify degraded remnant prairies and restorations (400 acres); reduce woody stems	June 2022	
encroaching into prairie (200 acres), thin 50 acres of savanna adjacent to skipper habitat		

Activity 2: Reintroducing Endangered Prairie Butterflies

The Minnesota Zoo will help save Minnesota's Threatened and Endangered butterflies through its foundational rearing, breeding, and release programs. The Zoo will produce at least 200 Dakota skippers annually, then

release and monitor those individuals at HIMPP and then at Glacial Lakes State Park to help re-establish lost populations and understand conditions they need in the wild. Reintroductions at HIMPP began in 2017 and will be expanded to strengthen the viability of the population. Reintroductions at Glacial Lakes will occur once planted flowers mature and bloom.

ENRTF BUDGET: \$621,103

Outcome	Completion Date
1. Perform years 4 and 5 of Dakota skipper reintroductions at HIMPP	August 2022
3. Perform year 1 of Dakota skipper reintroductions and monitoring at Glacial Lakes State	August 2023
Park. Monitor Dakota skippers at HIMPP	
4. Establish plans for 2024 reintroductions and augmentations	June 2024

Activity 3: Understanding prairie butterfly disappearance and factors needed for recovery

The Zoo will sponsor a University of Minnesota graduate student to compile and use historical data to assess factors associated with the disappearance of imperiled prairie butterflies like the Dakota skipper. Additionally, the student will study how purple coneflower density, management practices, pesticides drift, and other environmental factors alter prairie habitat and affect establishment of reintroduced Dakota skippers at HIMPP and Glacial Lake23s. Results of the work can be applied broadly and scaled up to identify management actions and additional prairies for future Dakota skipper reintroductions.

ENRTF BUDGET: \$165,000

Outcome	Completion Date
1. Complete analysis of factors that have influenced disappearance of prairie butterflies	July 2023
from historically occupied sites	
2. Collect plant, pesticides residue, and environmental data before and after experimental	October 2023
habitat management activities. Track the responses of reintroduced Dakota skippers to	
those manipulations.	
3. Analyze data and use findings to develop habitat composition and management	June 2024
prescriptions to promote Dakota skipper population sustainability, and recommendations	
for additional reintroduction locations.	

III. PROJECT PARTNERS AND COLLABORATORS:

The Minnesota Zoo portion will be led by Project Manager Dr. Erik Runquist, Prairie Butterfly Conservation Biologist. The Minnesota DNR State Parks and Trails portion will be managed by Edward Quinn, Resource Management Supervisor. The Nature Conservancy (Dr. Marissa Ahlering, Lead Prairie Ecologist) will provide support through habitat management and related data collection at the Hole-in-the-Mountain Prairie Preserve. The Nature Conservancy would not receive ENRTF support for this project.

IV. LONG-TERM- IMPLEMENTATION AND FUNDING:

We seek to develop a toolkit that will provide guidance to land managers, and to advance pollinator conservation statewide. The results of our efforts will be compiled and submitted for peer-reviewed scientific publication. MNDNR Division of Parks & Trails has an extensive history restoring and maintaining high quality native prairies through regular, accepted practices for habitat management. Monies for these efforts will be provided through the Parks & Trails Legacy fund and the general fund. TNC plans to continue to manage the HIMPP to benefit native prairie diversity, including rare and threatened species such as the Dakota skipper. The Minnesota Zoo would continue rearing, breeding, and reintroduction efforts. The Glacial Lakes State Park Dakota skipper reintroduction would likely continue into 2025, with monitoring into 2027. Funding from as many sources as possible would be pursued, including the Minnesota Zoo, Minnesota Zoo Foundation, US Fish and Wildlife Service, ENRTF, and other grants.

Attachment A: Project Budget Spreadsheet Environment and Natural Resources Trust Fund

M.L. 2020 Budget Spreadsheet

Legal Citation:

Project Manager: Dr. Erik Runquist

Project Title: Saving Endangered Pollinators Through Data-driven Prairie Restoration

Organization: Minnesota Zoo

Project Budget: \$1,024,915

Project Length and Completion Date: 4 years. Completion: June 30, 2024 Today's Date: April 15, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET			Budget	Amount Spent	Bala	nce
BUDGET ITEM		-				
Personnel (Wages and Benefits) Zoo: Butterfly Conservation Biologist (one State Program Administrator Principal at av	verage 75% time,	Ş	690,103	Ş -	Ş	-
Tor Fr21+Fr24; box toward salary and 32x toward benefits). Zoo: Butterfly Conservation Specialist (one Research Scientist 1 at average 75% time, 77% toward salary and 23% toward benefits).	for FY21-FY24;					
Parks: Dedicated resource staff - native seed collection, cleaning and site preparation burning, planting, vegetaion surveys, woody stem shearing, savanna thinning saw wo management. The amount per year will be 873.4 hours, times 4 years = 3,494.4 hour	, prescribed Irk and debris s/2080 = 1.68 FTE.					
Professional/Technical/Service Contracts						
Zoo: University of Minnesota Research Assistantship (50% Research Assistantship for student; FY21, FY22, FY23), plus travel and supplies. The Zoo will seek other funds to student in FY24.	a single graduate support the	\$	145,000	\$ -	\$	-
Zoo:Pesticides residue analysis contract. Contractor and actual amount subject to RFI National Sciences Lab was selected in current ENRTF and is likely to be used again. Cu \$176-\$396/sample depending on analysis. This would test about 50 samples for pesti across 4-5 prairie remnants.	P, but the USDA rrent rates are cide residues	\$	20,000	\$ -	Ş	-
Parks: Native plant plugs grown from Glacial Lakes origin seed; tractor/mower truckir Subject to competitive bidding.	ng contracts.	\$	38,000	\$ -	\$	-
Equipment/Tools/Supplies		Â			<u>,</u>	
200: Plants, rearing supplies, collection and release supplies necessary to conduct the breeding, and reintroduction programs.	rearing,	\$	20,000	\$ -	\$	-
Parks: Supplies and Equipment: Hose-sprinklers for experimental exclusion of fire from seeder/tractor supplies; usage costs of tractor/skidsteer to shear 200 acres, interseer truax and/or vicon seeder and cut pile 50 acres savanna. Seed harvest with Gleaner K stripper and UTV. Herbicide application with backpack sprayers/UTV boom sprayers.	n plots, d 400 acres with combine, seed	\$	57,000	\$ -	\$	-
Capital Expenditures Over \$5,000		Ś	-	\$ -	\$	-
Fee Title Acquisition		Ś		\$	Ś	
Easement Acquisition		ć		ć	ć	
Professional Services for Acquisition		\$	-	 -	\$	
Printing		Ş	-	Ş -	Ş	
Travel expenses in Minneseta		\$	-	\$-	\$	-
Too: Mileage, lodging, meals for travel to and between Minnesota prairie sites for dat husdandry/reintroduction operations.	ta collection and	\$	12,000	\$ -	\$	-
PAT: Resource crew food, transportation costs		\$	25,000	\$-	\$	-
Zoo: travel expenses outside of MN. Mileage, lodging, meals for travel to and betwee obtain Dakota skippers for the Zoo conservation program. The largest viable populati skipper butterflies are now outside of Minnesota, particularly in South Dakota and No necessitating out of state travel.	n prairie sites to ons of Dakota orth Dakota,	\$	4,000	\$-	\$	-
Parks: *DNR-specific Direct and necessary expenses: HR Support (~\$2,482), Safety Su Financial Support (~\$2,885), Communications Support (~\$1,251), IT Support (\$5,622), (~\$1,059) necessary to accomplish funded project.	pport (~\$514), Planning Support	\$	13,812	\$ -	Ş	-
COLUMN TOTAL		\$	1,024,915	\$-	\$	-
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured		Budget	Spent	Bala	nce
Non-State: Zoo: Minnesota Zoo Foundation; additional funding for pesticides residue analysis and program supplies	Pending	\$	20,000	\$ -	\$	-
State: Zoo: General Operating and/or Legacy Amendment Arts and Cultural Heritage Fund. Up to ~25% salary and benefits for the Butterfly Conservation Biologist and Butterfly Conservation Specialist, for FY21-24.	Pending	\$	273,048	\$ -	\$	-
State: Parks and Trails: General Fund and/or Legacy Amendment funds. Additional supplies and equipment and personnel costs necessary to coordinate execution of the PAT components.	Pending	\$	20,000	\$-	\$	-
In kind:		\$	-	\$-	\$	-
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS	Amount legally obligated but not yet spent		Budget	Spent	Bala	nce
Zoo: M.L. 2014, Chp. 226, Sec. 2, Subd. 05j-1. "Imperiled Prairie Butterfly Conservation, Research and Breeding Program". The amount listed here reflects final expenditures, as of August 2017.	\$ 11,232	\$	380,000	\$ 368,768	\$	11,232
Zoo: M.L. 2016, Chp. 186, Chp. 2, Sec. 2, Subd. 03c1. "Prairie Butterfly Conservation, Research, and Breeding – Phase II". The amount listed here is remainder of April 2019. and will be expended by the end of FY19.	\$ 58,497	\$	421,000	\$ 362,504	\$	58,496

ENVIRONMENT

TRUST FUND



A reintroduced, Federally Threatened, **Dakota skipper** at Hole-in-the-Mountain Prairie Preserve.

Saving Endangered Prairie Pollinators through Data-driven Habitat Restoration

Last known Dakota skipper location in MN

Proposed Dakota skipper reintroduction at Glacial Lakes State Park

Dakota skipper reintroductions at Hole-in-the-Mountain Prairie Preserve Minnesota Zoo, Parks and Trails, and The Nature Conservancy will use prairie restorations and Dakota skipper reintroductions to study factors affecting Minnesota Endangered butterflies and develop foundational management recommendations for imperiled Minnesota prairie butterflies.





The Nature Conservancy

Minnesota Zo

Narrow-leaved coneflower is important for many Minnesota pollinators, including the US Threatened and MN Endangered Dakota skipper. It is now uncommon in some prairies though. We will study how varying blooming densities of this wildflower and other native prairie plants through different management techniques influences reintroduction success of Dakota skippers.

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Dakota Skipper Occurrence

Present Possibly Extinct Extinct

05/13/2019 w-leaved coneflower overlooking Glacial LENRState Pa21,2: Fdy Lueth

Attachment C: Environment and Natural Resources Trust Fund M.L. 2019 Acquisition/Restoration Parcel List Spreadsheet Saving Endangered Pollinators through Data-driven Prairie Restoration Legal Citation: Ed Quinn MN DNR Division of Parks and Trails \$238,813.00 4 years, June 30, 2024 Todays's Date: April 15, 2019



#	Acquisition or Restoration Parcel Name	Geog Coord (preferabl center of ' Format [Min.]' [Hen Latitude	raphic linates y from the the parcel) : [Deg.]° ' [Sec.]" mis.]	Estimated	Estimated Annual PILT Liabilities	County	Site Significance (please include what ecosystem (e.g., prairie, forest, wetland, savanna) is represented as well as the ecological significance, site importance, conservation value, and public benefits)	Activity Description (e.g. fee title acquisition, conservation easement acquisition, site preparation, restoration)	# of Acres	# of Shorelin e Miles	Type of Landowner (private individual or trust, non- profit organization, for-profit entity)	Proposed Fee Title or Easement Holder (if applicable)	Status of work (e.g. engaged in landowner negotiations, no longer in consideration, restoration activities underway)
1	Glacial Lakes State Park	45 32' 01793	95 30' 33.197	\$ 78,813		Pope	MN Critically Imperiled Dy Hill Oak Savanna	reduce overstory trees, shear regrowth and seed native prairie species as needed	50		Public, state MN		begin, Jul 2018
2	Glacial Lakes State Park	45 32' 01793	95 30' 33.197	\$60,000		Роре	MN Imperiled Dry Sand Gravel Prairie	reduce woody encroachement into remnant native prairie, especially adjacent to high quality remnant prairie	200		Public, state MN		begin, Jul 2018
3	Glacial Lakes State Park	45 32' 01793	95 30' 33.197	\$ 100,000		Роре	MN Imperiled Dry Sand Gravel Prairie	add forb and grass diversity to remnant and restored dry sand gravel prairies to enhance endangered prairie pollinator habitat, including seeding and transplant plugs	400		Public, state MN		begin, Jul 2018
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NOTES:

ORGANIZATION DESCRIPTION: Minnesota Zoological Garden

The Minnesota Zoo, a state agency established in 1978 to provide Minnesota residents and guests with a unique opportunity to experience animals from the exotic to the familiar, is today one of the State's premier cultural, educational, and conservation institutions.

The Zoo's mission is **to connect people, animals and the natural world to save wildlife.** With over 1.2 million guests a year and state-wide outreach programs, the Zoo is in a unique position to strengthen Minnesotans' awareness and understanding of our State's cultural commitment to wildlife, science and conservation. The Zoo is, in fact, the State's largest environmental educator.

The Minnesota Zoo has also become a worldwide leader in conservation – conducting breeding programs and field efforts at the Zoo, in Minnesota, and across the globe. The Zoo has recently enhanced its efforts to focus on Minnesota wildlife and habitats, including efforts to conserve Minnesota's moose, bison, prairie butterfly, freshwater mussel, and turtle populations. It is also working to restore undeveloped areas on its own 485 acre site to native conditions, and exploring ways to provide educational opportunities to interpret those efforts.

The Zoo has a proven record of using its resources efficiently and effectively, *matching* the State's investment with private funds and earned income.

ZOO PROJECT MANAGER: Erik Runquist, PhD

Erik Runquist is the Butterfly Conservation Biologist at the Minnesota Zoo where he has coordinated the Prairie Butterfly Conservation Program since its inception in 2012. He manages research, personnel, and budgets for the Program. Erik holds a PhD in Ecology with an emphasis in Conservation Biology from the University of California, Davis and studied butterflies for his doctoral degree.

ORGANIZATION DESCRIPTION: Minnesota Department of Natural Resources Division of Parks & Trails

The Department of Natural Resources-Division of Parks and Trails operates 67 state parks, 9 state recreation areas, 25 state trail segments, 1,496 water access sites, 33 water trails and 8 state waysides throughout Minnesota. The Division is responsible for protecting, managing & restoring natural and cultural resources and providing outstanding park, trail and water recreation experiences for visitors.

DNR PROJECT MANAGER: Edward Quinn

Ed Quinn oversees the natural/cultural resource management program for the Division of Parks & Trails. He provides direction for and coordination of 17 Parks & Trails resource management specialists and technicians. The program is responsible for protecting, managing and restoring natural/cultural resources on division-administered lands. Annually the division restores approximately 840 acres of prairie, forest & wetlands, conducts prescribed burns on about 5,800 acres and manages invasive species on approximately 10,000 acres.

Ed has worked in the natural resource field for 35 years (20 with MNDNR). He has been employed as a naturalist, wildlife biologist and natural areas manager. He has overseen the MNDNR Parks & Trails resource program since 1998. He holds a bachelor's degree in Fish & Wildlife from Michigan State University and a master's degree in Biological Sciences from the University of Minnesota. He has been a certified wildlife biologist since 1994.