Environment and Natural Resources Trust Fund (ENRTF)
M.L. 2019 ENRTF Work Plan (Main Document)

Today's Date: August 27, 2018

Date of Next Status Update Report: November 30, 2019

Date of Work Plan Approval: June 5, 2019

Project Completion Date: June 30, 2023

Does this submission include an amendment request? __

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

Project Manager: Dr. Erik Runquist

Organization: Minnesota Zoo

College/Department/Division: Conservation Department

Mailing Address: Minnesota Zoo, 13000 Zoo Blvd

City/State/Zip Code: Apple Valley, MN 55124

Telephone Number: 952-431-9562

Email Address: Erik.Runquist@state.mn.us

Web Address:

Location: Glacial Lakes State Park (Pope County), Hole-in-the-Mountain Prairie Preserve (Lincoln County), Minnesota Zoo (Dakota County). Implications throughout western and southern Minnesota prairie regions.

Total Project Budget: $800,000

Amount Spent: $0

Balance: $800,000

Legal Citation: M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 08a

Appropriation Language: $800,000 the first year is from the trust fund. Of this amount, $630,000 is to the Minnesota Zoological Garden and $170,000 is to the commissioner of natural resources to reestablish populations of Minnesota's imperiled butterflies through reintroductions and prairie restorations and by developing foundational habitat recommendations for preventing future extinctions. This appropriation is available until June 30, 2023, by which time the project must be completed and final products delivered.

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-in-the-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 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 and identifying additional reintroduction locations. 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", 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. OVERALL PROJECT STATUS UPDATES:

First Update November 30, 2019

Second Update May 31, 2020

Third Update November 30, 2020

Fourth Update May 31, 2021

Fifth Update November 30, 2021

Sixth Update May 31, 2022

Eighth Update November 30, 2022

Ninth Update May 31, 2023

Final Report between project end (June 30) and August 15, 2023

III. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1 Title: Enhancing Prairie at Glacial Lakes State Park for Pollinators

Description: 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.

ACTIVITY 1 ENRTF BUDGET: $ 170,339

Outcome	Completion Date
1. Establish plot locations/ design; plant 10,000 plugs of wildflower species known to be important for Dakota skippers and other pollinators	November 2019
2. Finalize planning for experimental vegetation manipulation in established plots, implement year-1 manipulations	October 2020
3. Diversify degraded remnant prairies and restorations (400 acres); reduce woody stems encroaching into prairie (200 acres), thin 50 acres of savanna adjacent to skipper habitat	June 2021

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ACTIVITY 2 Title: Reintroducing Endangered Prairie Butterflies

Description: The 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.

ACTIVITY 2 ENRTF BUDGET: $510,661

Outcome	Completion Date
1. Perform years 3, 4, and 5 of Dakota skipper reintroductions at HIMPP	August 2021
3. Perform year 1 of Dakota skipper reintroductions and monitoring at Glacial Lakes State Park. Monitor Dakota skippers at HIMPP	August 2022
4. Establish plans for 2023 reintroductions and augmentations	June 2023

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ACTIVITY 3 Title: Understanding prairie butterfly disappearance and factors needed for recovery

Description: 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 Lakes. Results of the work can be applied broadly and scaled up to identify management actions and additional prairies for future Dakota skipper reintroductions.

ACTIVITY 3 ENRTF BUDGET: $119,000

Outcome	Completion Date
1. Complete analysis of factors that have influenced disappearance of prairie butterflies from historically occupied sites	July 2022
2. Collect plant, pesticides residue, and environmental data before and after experimental habitat management activities. Track the responses of reintroduced Dakota skippers to those manipulations.	October 2022
3. Analyze data and use findings to develop habitat composition and management prescriptions to promote Dakota skipper population sustainability, and recommendations for additional reintroduction locations.	June 2023

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IV. DISSEMINATION:

Description:
The activities and results of the project will be shared with all named partners and permit agencies through annual reports. The outcomes of the research will be submitted for publication in independent peer-reviewed scientific journals. Findings will also be communicated through the Minnesota Zoo's and the State Parks and Trails marketing and education departments as much as possible, including through webpage and social media channels (mnzoo.org, dnr.state.mn.us/state_parks), as well as presentations by the Project Manager and other Project personnel to the public and other interested parties. Staff, interns, and volunteers at the Zoo and at Glacial Lakes State Park will also be trained to talk about the project, prairie butterflies, and the importance of prairies to the public.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement Guidelines.
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V. ADDITIONAL BUDGET INFORMATION:
A. Personnel and Capital Expenditures

Explanation of Capital Expenditures Greater Than $5,000: N/A

Explanation of Use of Classified Staff: N/A

Total Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation:

Enter Total Estimated Personnel Hours for entire duration of project: **MNZoo:** 10,816; **PAT:** 3494.4	Divide total personnel hours by 2,080 hours in 1 yr = TOTAL FTE: **MNZoo** 5.2; **PAT:** 1.68

Total Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:

Enter Total Estimated Contract Personnel Hours for entire duration of project: **MNZoo:** 5546.6	Divide total contract hours by 2,080 hours in 1 yr = TOTAL FTE: **MNZoo:** 2.67

VI. PROJECT PARTNERS:

A. Partners outside of project manager's organization receiving ENRTF funding

Name	Title	Affiliation	Role
Ed Quinn	Resource Management Supervisor	MN Parks and Trails	PAT's Project manager

B. Partners outside of project manager's organization NOT receiving ENRTF funding

Name	Title	Affiliation	Role
Marissa Ahlering	Lead Prairie Ecologist	The Nature Conservancy	Support at Hole-in-the-Mountain Prairie

VII. LONG-TERM- IMPLEMENTATION AND FUNDING:

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 2024, with monitoring into 2026. 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.

VIII. REPORTING REQUIREMENTS:

- Project status update reports will be submitted May 31 and November 30 each year of the project
- A final report and associated products will be submitted between June 30 and August 15, 2023

IX. SEE ADDITIONAL WORK PLAN COMPONENTS:

A. Budget Spreadsheet
B. Visual Component or Map
C. Parcel List Spreadsheet
D. Acquisition, Easements, and Restoration Requirements
E. Research Addendum

Attachment A:
Environment and Natural Resources Trust Fund
M.L. 2019 Budget Spreadsheet
Legal Citation: M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 08a
Project Manager: Dr. Erik Runquist
Project Title: Saving Endangered Pollinators through Data-driven Prairie Restoration
Organization: Minnesota Zoo
Project Budget: $630,000
Project Length and Completion Date: 4 years, June 30, 2023
Today's Date: August 27, 2018

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	$ 472,479	$ -	$ 472,479
ZOO: Butterfly Conservation Biologist (one State Program Administrator Principal at average 65% time, for FY20, FY21, FY22, & FY23; 68% toward salary and 32% toward benefits).			
ZOO: Butterfly Conservation Specialist (one Research Scientist 1 at average 65% time, for FY20, FY21, FY22, & FY23; 77% of dollars toward salary and 23% toward benefits)			
Professional/Technical/Service Contracts			
ZOO: University of Minnesota Research Assistantship (Research Assistantship for a single graduate student; 33% for FY20, 100% for FY21 and FY22), plus travel and supplies and pesticides sample analyses. The Zoo will seek other funds to support the student in FY23.	$ 119,000	$ -	$ 119,000
Equipment/Tools/Supplies			
ZOO: Breeding/Reintroduction: Plants, rearing supplies, collection and release supplies	$ 22,521	$ -	$ 22,521
Travel expenses in Minnesota			
ZOO: Mileage, lodging, meals for travel to and between Minnesota prairie sites for data collection and husdandry/reintroduction operations.	$ 12,000	$ -	$ 12,000
Other			
ZOO: travel expenses outside of MN. Mileage, lodging, meals for travel to and between prairie sites to obtain Dakota skippers for the Zoo conservation program. The largest viable populations of Dakota skipper butterflies are now outside of Minnesota, particularly in South Dakota and North Dakota, necessitating out of state travel.	$ 4,000	$ -	$ 4,000
COLUMN TOTAL	$ 630,000	$ -	$ 630,000

OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
Non-State:		$ -	$ -	$ -
ZOO: Interagency Agreement with the US Fish and Wildlife Service through the Great Lakes Restoration Inititative for partial personnel costs during FY20 and FY21.	Secured	$ 102,000	$ -	$ 102,000
ZOO: The Minnesota Zoo will seek federal or other non-state funding to support about 50% of the remainder of Zoo personnel not funded for this project	Pending	$ 126,115	$ -	$ 126,115
ZOO: The Minnesota Zoo Foundation projects to provide $5,000 annually to the Zoo's section of this program for additional funding for pesticides residue analysis, supplies, and/or travel costs.	Pending	$ 20,000	$ -	$ 20,000
State:		$ -	$ -	$ -
ZOO: The Zoo will apply a projected $126,115 during the course of the project using a combination of Legacy and/or other Zoo sources to support about 50% of the remainder of Zoo personnel not funded for this project	Pending	$ 126,115	$ -	$ 126,115
In kind:		$ -	$ -	$ -

PAST AND CURRENT ENRTF APPROPRIATIONS	Amount legally obligated but not yet spent	Budget	Spent	Balance
Current appropriation:		$ -	$ -	$ -
Past appropriations:				
ZOO: M.L. 2014, Chp. 226, Sec. 2, Subd. 05j-1. "Imperiled Prairie Butterfly Conservation, Research and Breeding Program". Expired end of FY17.	$ 10,536	$ 380,000	$ 369,464	$ 10,536
ZOO: M.L. 2016, Chp. 186, Chp. 2, Sec. 2, Subd. 03c1. "Prairie Butterfly Conservation, Research, and Breeding – Phase II". Expires end of FY19.	$ 149,952	$ 421,000	$ 225,310	$ 195,690

Attachment A:
Environment and Natural Resources Trust Fund
M.L. 2019 Budget Spreadsheet
Legal Citation: M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 08a
Project Manager: Ed Quinn
Project Title: Saving Endangered Pollinators through Data-driven Prairie Restoration
Organization: MNDNR
Project Budget: $170,000
Project Length and Completion Date: 4 years, June 30, 2023
Today's Date: August 27, 2018

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	$ 90,000	$ -	$ 90,000
PAT: Dedicated resource staff - native seed collection, cleaning and site preparation, prescribed burning, planting, vegetaion surveys, woody stem shearing, savanna thinning saw work and debris management. The amount per year will be 873.4 hours, times 4 years = 3,494.4 hours/2080 = 1.68 FTE.			
Professional/Technical/Service Contracts			
PAT: Native plant plugs grown from Glacial Lakes origin seed; tractor/mower trucking contracts	$ 22,000	$ -	$ 22,000
Equipment/Tools/Supplies			
PAT: Herbicides, hose-sprinklers for experimental exclusion of fire from plots, seeder/tractor supplies; usage costs of tractor/skidsteer to shear 200 acres, interseed 600 acres with truax and/or vicon seeder and cut pile 50 acres savanna. Seed harvest with Gleaner K combine, seed stripper and UTV. Herbicide application with backpack sprayers/UTV boom sprayers.	$ 21,811	$ -	$ 21,811
	$ -	$ -	$ -
Travel expenses in Minnesota			
PAT: resource crew food, transportation costs	$ 24,661	$ -	$ 24,661
Other			
PAT: *Direct and necessary expenses: HR Support (~$2,068, Safety Support (~$428), Financial Support (~$1996), Communications Support (~$1,251), IT Support ($4685), Planning Support (~$1,059) necessary to accomplish funded project.	$ 11,528	$ -	$ 11,528
COLUMN TOTAL	$ 170,000	$ -	$ 170,000

OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
Non-State:		$ -	$ -	$ -
State:		$ -	$ -	$ -
PAT: MNDNR habitat mgmt. funding non-LCCMR Parks & Trails Legacy funding $71,644 ($17,911/year) .4 FTE plus materials/supplies.	Secured	$ 71,644	$ -	$ 71,644
In kind:		$ -	$ -	$ -

PAST AND CURRENT ENRTF APPROPRIATIONS	Amount legally obligated but not yet spent	Budget	Spent	Balance
Current appropriation:		$ -	$ -	$ -
Past appropriations:				