Environment and Natural Resources Trust Fund (ENRTF)
M.L. 2014 Work Plan

Date of Report: February 6, 2014

Date of Next Status Update Report: November 30, 2014

Date of Work Plan Approval:

Project Completion Date: June 30, 2016

Does this submission include an amendment request? No

PROJECT TITLE: Imperiled Prairie Butterfly Conservation, Research, and Breeding Program - Activity 3 by DNR – (Part 1 - Activities 1, 2, 4 and 5 are being done and described in a separate work plan by the Minnesota Zoo - $380,000)

Project Manager: Robert Dana, Ph. D.

Organization: Minnesota Dept. of Natural Resources

Mailing Address: 500 Lafayette Rd., Box 25

City/State/Zip Code: St. Paul, MN 55155

Telephone Number: (651) 259-5086

Email Address: robert.dana@state.mn.us

Web Address:

Location: Counties in the prairie region of MN: McCleod, Cottonwood, Murray, Pipestone, Lincoln, Lyon, Chippewa, Swift, Big Stone, Pope, Clay, Norman, Polk, Kittson, Roseau

Total ENRTF Project Budget:		
	ENRTF Appropriation:	**$245,000**
	Amount Spent:	**$0**
	Balance:	**$245,000**

Legal Citation: M.L. 2014, Chp. 226, Sec. 2, Subd. 05j-2

Appropriation Language:
$380,000 the second year is from the trust fund to the Minnesota Zoological Garden and $245,000 the second year is from the trust fund to the commissioner of natural resources to prevent the extirpation and possible extinction of imperiled native Minnesota butterfly species through breeding, genetics and mortality research, inventory, monitoring, and public education. This appropriation is available until June 30, 2017, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: Imperiled Prairie Butterfly Conservation, Research, and Breeding - Activity 3 by DNR – (Part 1 - Activities 1, 2, 4 and 5 are being done and described in a separate work plan by the Minnesota Zoo - $380,000)

II. PROJECT STATEMENT:
Prairies and their native wildlife are an important part of Minnesota's natural and cultural heritage. But with only 1% of that native prairie remaining, many prairie plant and animal species—including many species of once prevalent native butterflies—have dramatically declined. Of the butterfly species native to Minnesota prairies, 10 are of statewide conservation concern and two, the Poweshiek skipperling and the Dakota skipper, have now largely disappeared from the state and are proposed for listing under the U.S. Endangered Species Act despite being historically among the most common prairie butterflies and having their historic ranges concentrated in Minnesota.

With a particular focus on endangered butterfly species, the Minnesota Zoo and the Minnesota Department of Natural Resources are partnering to advance the understanding and conservation of this important component of Minnesota's prairie ecosystems. The Minnesota Zoo will expand its conservation breeding program for butterfly species most under threat of extinction like the Poweshiek skipperling and Dakota skipper, researching butterfly genetics and causes of mortality, and providing educational information on these species and efforts. The Minnesota DNR will simultaneously monitor the status of these and a number of additional targeted species on native prairie remnants across Minnesota. Such monitoring is necessary to detect negative trends so that they may be addressed before they become irreversible.

This work will provide needed information of status of not only Minnesota's native prairie butterflies, but also the greater prairie ecosystem. Beyond serving as pollinators for various prairie plants and as food sources for other prairie wildlife, butterflies are sensitive "canary in the coalmine" indicators of prairie ecosystem health. The loss of prairie has significant consequences for Minnesota's water quality and wildlife interests.

III. PROJECT STATUS UPDATES:

Project Status as of November 30, 2014:

Project Status as of May 31, 2015:

Project Status as of November 30, 2015:

Project Status as of May 31, 2016:

Project Status as of August 15, 2016:

Overall Project Outcomes and Results:

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Minnesota Zoo breeding conservation program for imperiled prairie butterflies (See separate work plan by MN Zoo)

ACTIVITY 2: Conservation genetics research on imperiled prairie butterflies (See separate work plan by MN Zoo)

ACTIVITY 3: DNR Butterfly Status Monitoring (was Activity 3 in the previous combined work plan)
Description:
This component of the project will focus heavily on two prairie-dependent skippers that are critically imperilled, the Poweshiek skipperling (PS) and the Dakota skipper (DS). In the first year (2014) approximately 40 sites

distributed throughout the prairie region of MN will be surveyed. These include all of the sites having historical records indicative of strong populations of PS and DS, as well as sites without such documentation but having attributes that should support such populations. These sites will be surveyed for the other prairie species as well. Surveys will be timed to coincide with peak adult numbers in the flight periods of target species. Two species have their adult flight in spring (May-early June), one in late summer (mid-late August), and the rest in early-mid-summer (mid June-late July). In order to survey all sites during the brief peak flight times four survey crews (two persons if possible) will be deployed. Those species whose flight periods are done before the July 1 start of the funding period will not be included in the 2014 work. Presence-absence survey work in 2015 will begin in time to include these species, and will provide a second year of survey for the later-flying species. A second year of presence-absence survey for the early-season species will be done in 2016 before the June 30 end of the funding period.

Surveys will follow standard protocols regarding time of day and weather conditions. Survey work in each site will continue until 10 observations are recorded or until the time limit for the site is reached, whichever comes first. Time limits will be determined based on the areal extent of the habitat to be surveyed. Surveyors will follow a roughly delineated route taking them through most or all of the appropriate habitat in a site, but adjusting the precise route as their judgment of conditions (e.g. locations of nectar flowers, host plants) indicates would be productive. They will employ GPS units to help guide them and record track logs of actual survey route taken.

In 2015 abundance-monitoring will be implemented for the summer skipper species in sites where the 2014 survey recorded 10 observations of the species. (If two similar nearby sites should meet this criterion, only one may be selected for the more intensive monitoring.) Similarly, this will be initiated for the early-season species in 2016 in those sites where the 2015 survey accumulated 10 observations. The methodology to be used for this has not been decided upon yet. This will likely be some version of the "Pollard Walk" approach (Pollard, E. & T.J. Yates. 1993. Monitoring butterflies for ecology and conservation. Chapman and Hall, London), essentially counts of observations along transects, standardized by either distance or time (therefore, an observational rate). The modification developed by Debinski et al. (2000) for the National Park Service [Debinski, D., S. Mahady, W. M. Rizzo, and G. D. Willson. 2000. Butterfly monitoring protocol for four prairie parks. U.S. Dept. of the Interior, U.S. Geological Survey] is particularly attractive, as it allows for standard statistical analysis. This involves the use of multiple short transects of equal length, similar to the point count methodology used for bird surveys. In addition to these abundance-monitoring events (if any), presence-absence monitoring will be repeated in the remaining sites.

ENRTF Budget: $245,000

Summary Budget Information for Activity 3:

Amount Spent: $ 0

Balance: $245,000

Activity Completion Date:

Outcome	Completion Date	Budget
1. 40 sites surveyed for presence of target species for 2 consecutive years.	June 30, 2016	$80,000
2. Sampling protocols for quantitative monitoring developed and tested	June 30, 2015	$49,994
3. Quantitative monitoring initiated in up to 13 of the 40 sites, depending on results of presence survey	June 30, 2016	$94,000
4. DNR direct and necessary	June 30, 2016	$21,006

Activity Status as of November 30, 2014:

Activity Status as of May 31, 2015:

Activity Status as of November 30, 2015:

Activity Status as of May 31, 2016:

Activity Status as of August 15, 2016:

Final Report Summary:

ACTIVITY 4: Pesticides-related mortality research on surrogate prairie butterflies (See separate work plan by MN Zoo)

ACTIVITY 5: Prairie Outreach and Environmental Education at the Zoo (See separate work plan by MN Zoo)

V. DISSEMINATION:

Description:
The survey and monitoring results will be entered into the DNR Natural Heritage Information System. A major use of this database is environmental review. The results will be shared with the US Fish and Wildlife Service for the two federally listed species. If USFWS initiates status review of any of the other species, the data for these will be made available. For the state-listed species, the species pages in the DNR website will be updated to reflect new information. The current state wildlife action plan (SWAP), Tomorrow's Habitat for the Wild and Rare will be revised and updated in 2016, and the results of this project will be incorporated in the new SWAP. Land managers (DNR Wildlife Management Areas, State Parks, Scientific and Natural Areas, Prairie Bank Easements, USFWS Waterfowl Production Areas, National Wildlife Refuges, The Nature Conservancy preserves) will be informed of the results for their respective units. Beyond the term of this project, the quantitative monitoring of selected sites will be analyzed for evidence of trends and for effects of particular management activities. These data may trigger more intensive research to determine causality.

Status as of November 30, 2014:

Status as of May 31, 2015:

Status as of November 30, 2015:

Status as of May 31, 2016:

Status as of August 15, 2016:

Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget Overview:

Budget Category	$ Amount	Explanation
Personnel:	$148,500	DNR entomologist (1 unclssf @ 50%time, salary and benefits, 2 yrs) DNR asst. entomoloist (1 unclssf @ 50% time, salary & benefits, 2 yrs)
Professional/Technical/Service Contracts:	$ 56,950	Survey & monitoring contracts (experienced insect surveyors), information system product development
Equipment/Tools/Supplies:	$ 2,194	Data measurement & collection, specimen curation supplies
Travel Expenses in MN:	$ 16,350	Travel to sites, meals, lodging during field work
Other:	$ 21,006	DNR Direct and Necessary*
TOTAL ENRTF BUDGET:	**$245,000**	

*Direct and Necessary expenses include both Department Support Services (Human Resources, IT Support, Safety, Financial Support, Communications Support, Planning Support, and Procurement Support) and Division Support Services. Department Support Services are described in the agency Service Level Agreement, and is billed internally to divisions based on rates that have been developed for each area of service. These services are directly related to and necessary for the appropriation. Department leadership services (Commissioner's Office and Regional Directors) are not assessed. Division Support Services include costs associated with Division business offices and clerical support. Those elements of individual projects that put little or no demand on support services such as large single-source contracts, large land acquisitions, and funds that are passed-thru to other entities are not assessed Direct and Necessary costs for those activities.

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

Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation:
2

Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:
0.75

B. Other Funds:
No other funds will be used for this part of the project.

VII. PROJECT STRATEGY:

A. Project Partners: Minnesota Zoo

B. Project Impact and Long-term Strategy: Extensive survey efforts in MN directed at PS and DS from 2006 to 2013 have pointed to a steep decline in both, to the point that PS may be extirpated and DS may be close to meeting the same fate. Survey work in other states in these skippers' ranges are yielding similar results. Although the other species have been the target of comparable survey work, there are troubling indications of declines. This project will assist the DNR in broadening the scope of survey and monitoring efforts for prairie-dependent butterflies. The immediate benefit will be the discovery of surviving colonies of one or both of the two highest priority species. This will support the Zoo's genetic study and captive breeding project for these species. Initiation of the complementary monitoring of individual populations will provide the foundation for a higher-resolution tracking of population trends and for detection of causation.

Monitoring is obviously a long-term commitment, and this project will constitute only the beginning. We intend this project to develop monitoring protocols that will be used long-term. We will be working on strategies for funding the long-term work.

C. Spending History:

Funding Source	M.L. 2008 or FY09	M.L. 2009 or FY10	M.L. 2010 or FY11	M.L. 2011 or FY12-13	M.L. 2013 or FY14

VIII. ACQUISITION/RESTORATION LIST:

IX. VISUAL ELEMENT or MAP(S):
See attached Map of survey sites superimposed on Prairie Plan map.

X. ACQUISITION/RESTORATION REQUIREMENTS WORKSHEET:
No acquisitions or restoration work is included in this part of the project.

XI. RESEARCH ADDENDUM:
See Research Addendum which is part of the separate MN Zoo work plan.

XII. REPORTING REQUIREMENTS:
Periodic work plan status update reports will be submitted no later than Nov. 31, 2014, May 31, 2015, Nov. 31, 2015. A final report and associated products will be submitted no later than Aug. 15, 2016.

Environment and Natural Resources Trust Fund

M.L. 2014 Project Budget

Project Title: Imperiled Prairie Butterfly Conservation, Research, and Breeding Program –MN DNR part

Legal Citation: M.L. 2014, Chp. 226, Sec. 2, Subd. 05j-2

Project Manager: Robert Dana, Ph. D.

Organization: MN Dept. of Natural Resources - Activity 3 only - Activities 1, 2,4 and 5 are in a separate Work Plan by the MN Zoo

M.L. 2014 ENRTF Appropriation: $ 245,000.00

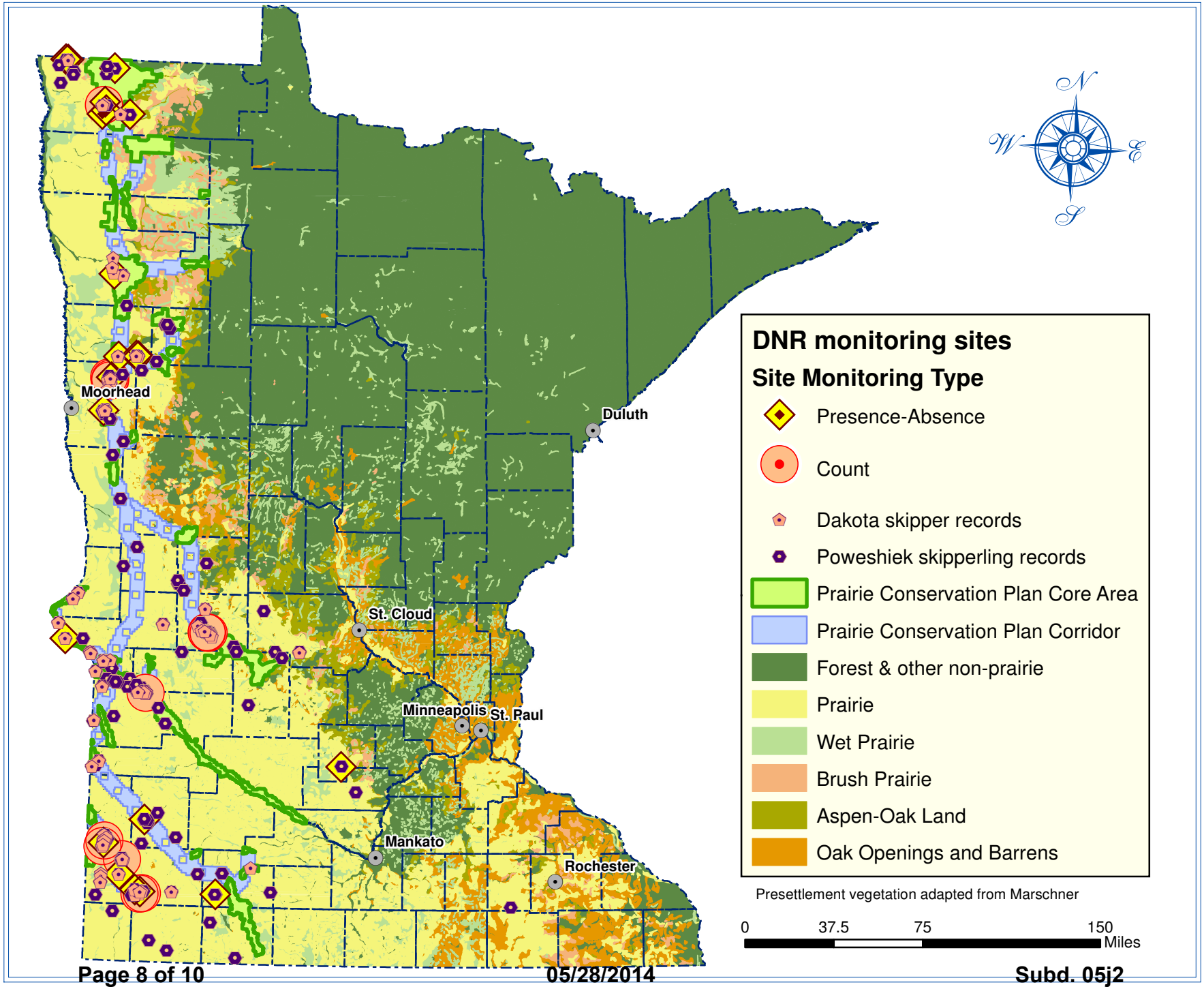
Project Length and Completion Date: 2 Years, June 30, 2016

Date of Report: August 15, 2016

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 3 Budget*	Amount Spent	Activity 3 Balance
BUDGET ITEM	**DNR Butterfly Status Monitoring**		
Personnel (Wages and Benefits)	$148,500	$0	$148,500
Robert Dana, Lead Entomologist. $98,500 (75% salary, 30% benefits); 1 FTE for 2 years			
Assistant Entomologist. $50,000 (75% salary, 30% benefits); 1 FTE for 2 years			
Professional/Technical/Service Contracts			
TBD (competitive bid); site surveys to detect presence of target butterfly species; quantitative monitoring in selected sites.	$56,950	$0	$56,950
Equipment/Tools/Supplies			
1 GPS-enabled field data recorder (Trimble Juno 3B)	$800	$0	$800
ArcPad software for Juno	$700	$0	$700
Kestrel 2500 Pocket Weather Meter	$150	$0	$150
Miscellaneous field supplies	$544	$0	$544
Travel expenses in Minnesota Mileage, lodging, meals for travel to and among survey/monitoring sites	$16,350	$0	$16,350
Other DNR Direct and Necessary	$21,006	$0	$21,006
COLUMN TOTAL	**$245,000**	**$0**	**$245,000**

Note: Activities 1, 2 and 4 are in a separate budget sheet by the MN Zoo - Erik Rundquist Project Manager

2014 LCCMR Proposal: Prairie Butterfly Conservation, Research, and Breeding Program.
DNR Monitoring Sites in Relation to MN Prairie Plan



DNR Direct & Necessary Cost Calculator DRAFT 1-10-14

Fill in yellow cells to calculate services your program needs. All other cells are formulaic and locked.

Division: EWR

Project Title: Prairie Butterfly Conservation, Research and Breeding Program

LCCMR Request (before D&N)	Fee Title or Easement Acquisition	Pass-through Grants	Single-source Contract		Metric	Metric Value	Number of Units	Total D&N
$ 245,000	$ -	$ -	$ -	**People Support**	FTE	$ 1,326	3	$ 3,978
				Safety Support	FTE	$ 328	3	$ 984
				Financial Support	All Other Costs	$ 0.013	$223,994	$ 2,912
				Communication Support	Altmnts	$ 1,141	1	$ 1,141
				IT Support	IT User ID	$ 2,273	3	$ 6,819
				Planning Support	Altmnts	$ 704	1	$ 704
				Procurement Support	Altmnts	$ 235	1	$ 235
				Division Direct (project)	Cost/dollar (.0189)	0.0189		$4,233
				Division Direct (program)	Cost/dollar (.0463)	0.0000		$0
							Total Direct & Necessary:	**$ 21,006**
							Costs before Direct and Necessary:	$ 223,994
							Total Project Costs:	**$ 245,000**

Position Title	Staff Funded by Program/Project					
Position Title	FTE's Funded	Years	User ID's Needed	Years	FTE-Year Units	User ID-Year Units
Entomologists	1.5	2	1.5	2	3	3
					0	0
					0	0
					0	0
					0	0
					0	0
					0	0
				SUM:	**3**	**3**

Notes on calculations

People Support: FY14 HR Budget/2012-13 March/March FTE
Safety Support: FY14 Safety Budget/2012-13 March/March FTE
Financial Support: Source: FY14 OMBS Budget/FY13 Approp & Dedicated Revenue Budget
Communication Support: FY14 OCO Budget/2013 Allotments
Computer Support: FY14-15 MN.IT Services @ DNR SLA Budget (Governance Subtotal + IT Server Initiative/2012-13 March/March FTE)
Planning Services: FY14 Planning Budget/2013 Allotments
Procurement Support: FY14 Procurement Budget/2013 Allotments
Division Support: Cost/dollar (from D&N Cost Analysis)