



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

Today's Date: 10/18/18

Date of Next Status Update Report: January 31, 2020

Date of Work Plan Approval: June 5, 2019

Project Completion Date: June 30, 2021

Does this submission include an amendment request?

PROJECT TITLE: Unlocking the Science of Minnesota's Moose Decline

Project Manager: Nicole Mattson

Organization: Minnesota Zoo

College/Department/Division:

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Web Address: www.mnzoo.org

Location: Statewide

Total Project Budget: \$199,000

Amount Spent: \$0

Balance: \$199,000

Legal Citation: M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03p

Appropriation Language: \$199,000 the first year is from the trust fund to the Minnesota Zoological Garden to develop educational displays, interactive exhibits, and engaging online programs that summarize and share scientific findings about moose decline in Minnesota. This appropriation is available until June 30, 2021, by which time the project must be completed and final products delivered.

I. PROJECT STATEMENT:

The moose is an iconic Northwoods mammal that has had an important presence in Minnesota and at the Minnesota Zoo. However, moose in Minnesota have experienced dramatic population declines in the last 25 years. They have nearly disappeared from northwestern Minnesota. Moose numbers have declined by almost 60% over the past decade in the northeastern corner of our state. Minnesotans are keenly aware of the moose decline and want to know more about its causes and what can be done to help.

Significant public resources have been invested in scientific research to understand Minnesota’s moose decline. The Zoo will develop state of the art interpretive displays and interactive materials to make these complex research findings accessible to all Minnesotans—to those who visit the Zoo’s popular moose exhibit and to those who visit the Zoo’s website. With an annual attendance of 1.3 million visitors, extensive experience in educational interpretation, and over 2.7 million website hits per year, the Minnesota Zoo is in a unique position to disseminate moose research findings in an understandable fashion.

To accomplish this goal, the Zoo will:

- Work with Minnesota DNR and other scientists to develop key messages that reflect the major research findings and management strategies pertaining to Minnesota’s moose decline.
- Create and build interpretive graphic displays, interactive exhibits with technological components and touchable artifacts to be housed at a new “Moose Conservation Cabin” to be located at the site of the Zoo’s existing moose exhibit. The Moose Conservation Cabin will be paid for with separate funds.
- Develop and implement a website that explains moose research findings using plain language and providing online access to the information and technology components found onsite at the Zoo.

II. OVERALL PROJECT STATUS UPDATES:

First Update January 31, 2020

Second Update July 31, 2020

Third Update February 1, 2021

Final Report August 13, 2021

III. PROJECT ACTIVITIES AND OUTCOMES:

Activity 1: Collaborate with moose biologists to interpret existing research

Description: The Minnesota Zoo will convene DNR and other scientists from across the state to review and summarize key findings from the existing scientific literature on various topics related to Minnesota’s moose decline. Topics likely to be addressed include: moose population estimates over time, habitat use and needs, predation, heat stress, parasites and other health issues. Messaging about current management tactics and conservation challenges will be also identified. The Zoo will then refine the information to make it more accessible and understandable for a general public audience, including both children and adults.

Activity 1 ENRTF BUDGET: \$10,000

Outcome	Completion Date
1. Key messages regarding moose research results and moose management will be identified for use in Activities 2 & 3	December 31, 2019

First Update on Activity 1 January 31, 2020

Final Report on Activity 1 August 13, 2021

Activity 2: Develop and fabricate interpretive displays at the Zoo's moose exhibit

Description: For each major topic area identified in Activity 1, the Zoo will create onsite interpretive signage and displays for a new Moose Conservation Cabin at the Zoo's moose exhibit. Displays will include customized, interactive components to allow visitors to examine moose biology and to use model research equipment. Touchable artifacts will also be created that encourage Zoo visitors to explore moose natural history and research. Audio speakers and wiring will be included in the Moose Conservation Cabin to allow Zoo staff to engage visitors during live presentations about moose biology, care and research.

Activity 2 ENRTF BUDGET: \$113,000

Outcome	Completion Date
1. Concept development for interpretive displays and components completed.	October 31, 2019
2. Schematic designs for interpretive displays and components completed.	May 1, 2020
3. Final designs for interpretive displays and components completed.	September 1, 2020
4. Production and installation of interpretive displays and components completed	May 1, 2021

First Update on Activity 2 January 31, 2020

Second Update on Activity 2 July 31, 2020

Third Update February 1, 2021

Final Report on Activity 2 August 13, 2021

Activity 3: Develop interactive, web-integrated, moose research technology components

Description: The Zoo will use technology to expand access to and understanding of moose research and research methodologies. This includes development of customized, interactive programs that will allow users to become virtual moose managers, experimenting with real or simulated moose data to gain an understanding of the complex factors affecting moose survival in Minnesota. These programs will be beta tested with various groups to ensure usability and desired learning outcomes. The technology interactives will be integrated into educational displays at the Zoo's moose exhibit and available online through the Zoo's website. The Zoo's website will also be expanded to include additional information about moose research.

Activity 3 ENRTF BUDGET: \$76,000

Outcome	Completion Date
1. Concept development for interactive technology components completed.	June 30, 2020
2. Schematic designs for interactive technology components completed.	October 1, 2020
3. Basic moose research content developed for Zoo's website	December 31, 2020
4. Beta testing of interactive technology components completed.	February 28, 2021
5. Final designs for interactive technology components completed.	April 1, 2021
6. Installation of interactive technology components completed. Integration of moose research content and technology interactives with Zoo's website.	May 1, 2021

First Update on Activity 2 January 31, 2020

Second Update on Activity 3 on July 31, 2020

Third Update February 1, 2021

Final Report on Activity 3 August 13, 2021

IV. DISSEMINATION:

Description: Updates on activities will be shared with collaborators via regular written communication. A summary document of key moose research findings will be generated in Activity 1. Those findings will primarily be shared with the general public via interpretive messaging at the new moose exhibit and through the Minnesota Zoo's website. Additionally, information will be disseminated through the Zoo's education department during programs and through the Zoo's marketing department leading up to the exhibit opening in 2021. Lastly, information obtained in Activity 1 will be shared with Zoo staff and volunteers so they can disseminate to the general public in preparation for the exhibit opening in 2021.

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.

First Update January 31, 2020

Second Update July 31, 2020

Third Update February 1, 2021

Final Report on August 13, 2021

V. ADDITIONAL BUDGET INFORMATION:

A. Personnel and Capital Expenditures

Explanation of Capital Expenditures Greater Than \$5,000:

We anticipate that there will be three capital expenditures (executed via professional/technical/service contracts) that will exceed \$5,000, as part of this project:

- exhibitry contract to develop, fabricate & install indestructible, hands-on microscope with interchangeable slides with an expected lifespan of 10 years
- fabrication of permanent educational graphics with an expected lifespan of 10 years
- software contract to develop, produce, and install interactive technology components with web-integration, including associated monitors, equipment and housing with an expected lifespan of 5-10 years

These expenditures are essential to successfully achieve this project's goal of disseminating moose research findings in an accessible manner to the general public. We project that the capital expenditures associated with this project will extend beyond the 3-year duration of this grant, enabling us to continue to educate the public about Minnesota's moose decline for at least 10 years.

The State of Minnesota has a competitive bid process in place for awarding such contracts. The Zoo will abide by the State of Minnesota's guidelines when awarding these three contracts.

Explanation of Use of Classified Staff:

Three staff positions that will be supported by these ENRTF funds are classified. Current personnel have the necessary expertise to successfully and efficiently implement Activities 1, 2, and 3. Without the support of the

ENRTF funding, these staff would not have the ability to work on this project. Instead, they would focus on other position responsibilities. Incorporating the existing expertise from across departments at the Zoo will be essential for the completion of this project.

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

Enter Total Estimated Personnel Hours for entire duration of project: 1,632 hours	Divide total personnel hours by 2,080 hours in 1 yr = TOTAL FTE: .8 FTE
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Total Number of Full-time Equivalent (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:

Enter Total Estimated Contract Personnel Hours for entire duration of project: 1,700 hours	Divide total contract hours by 2,080 hours in 1 yr = TOTAL FTE: .8 FTE
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VI. PROJECT PARTNERS:

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

N/A

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

All partners will collaborate and advise on Activity 1.

Name	Title	Affiliation
G. DelGuidice	Research Scientist, Moose & Deer Proj Leader	Minnesota Department of Natural Resources
R. Moen	Senior Research Associate & Assoc. Professor	Univ of MN Duluth & Nat Res Research Institute
M. Schrage	Wildlife Biologist	Fond du Lac Band of Lake Superior Chippewa
S. Windels	Wildlife Biologist	National Park Service (Voyageurs National Park)
S. Moore	Director of Biology & Environment	Grand Portage Band of Lake Superior Chippewa

VII. LONG-TERM- IMPLEMENTATION AND FUNDING:

The interpretive displays and interactive components at the Zoo’s moose exhibit will be viewable year-round by Zoo guests. Interpretive exhibits at the Minnesota Zoo are designed for a 10-20 year lifespan and will be maintained with Zoo funds. The website and interactive technology pieces will also be maintained with Zoo funding for years to come. The Zoo will update content as feasible, when new information is available. This project will help ensure that the public is informed about research focused on moose decline in Minnesota and what Minnesota residents can do to prevent further problems.

VIII. REPORTING REQUIREMENTS:

- Project status update reports will be submitted twice annually for each year of the project: 31 January 2020, 31 July 2020, and 1 February 2021
- A final report and associated products will be submitted 13 August 2021

IX. SEE ADDITIONAL WORK PLAN COMPONENTS:

- A. Budget Spreadsheet**
- B. Visual Component**

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. 03p

Project Manager: Nicole Mattson

Project Title: Unlocking the Science of Minnesota's Moose Decline

Organization: Minnesota Zoo

Project Budget: \$199,000

Project Length and Completion Date: 2 years, June 30, 2021

Today's Date: 10/18/18



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	\$ 77,300	\$ -	\$ 77,300
Interpretive Program Developer/Project Manager, \$54,000 (66% salary/34% benefits) 30% FTE each year for 2 years			
Wildlife Research Advisor, \$15,000 (74% salary/26% benefits) 5% FTE each year for 2 years			
Graphic Designer, \$8,300 (66% salary/34% benefits) 20% FTE each month for 5 months			
Professional/Technical/Service Contracts			
TBD (competitive bid): Exhibitory contract to develop indestructible, hands-on microscope interactive concept. Fabrication and installation of microscope. Contract awarded through competitive bidding process in accordance with State of Minnesota guidelines.	\$ 6,500	\$ -	\$ 6,500
TBD (competitive bid): Fabrication of permanent educational graphics able to withstand zoo audience for 10-20 years. Contract awarded through competitive bidding process in accordance with State of Minnesota guidelines.	\$ 15,000	\$ -	\$ 15,000
TBD (competitive bid): Software development contract to create interactive technology components with web-integration. Production, beta testing and installation of interactive technology components. Purchase of associated monitors, computer equipment and audio components. See preliminary breakdown below. Contract awarded through competitive bidding process in accordance with State of Minnesota guidelines.	\$ 76,000	\$ -	\$ 76,000
Approx \$45,000 for software development & testing			
Approx \$16,000 for housing kiosk with heat & cooling			
Approx \$5,000 for 46"-55" all-weather touchscreen monitor			
Approx \$1,800 for computer or media player			
Approx \$2,000 for directional audio dome, speaker & wiring			
Approx \$600 for web domain & host			
Approx \$5,600 for installation & misc			
Equipment/Tools/Supplies			
Display and touchable artifacts (real or fabricated--tbd)	\$ 14,000	\$ -	\$ 14,000
Audio speakers & wiring for delivering live public presentations about moose care, biology and research	\$ 8,000	\$ -	\$ 8,000
Capital Expenditures Over \$5,000			
See Professional/Technical/Service Contracts listed above	\$ -	\$ -	\$ -
Fee Title Acquisition			
	\$ -	\$ -	\$ -
Easement Acquisition			
	\$ -	\$ -	\$ -
Professional Services for Acquisition			
	\$ -	\$ -	\$ -
Printing			
	\$ -	\$ -	\$ -
Travel expenses in Minnesota			
	\$ -	\$ -	\$ -
Other			
Professional stock photos or video footage to be integrated into technology interactives and signage	\$ 2,200	\$ -	\$ 2,200
COLUMN TOTAL	\$ 199,000	\$ -	\$ 199,000

OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
Non-State: Not yet determined		\$ -	\$ -	\$ -
State: The Zoo's general operating fund will provide additional support to the project, including utilities and administrative costs (15% of project budget). The Zoo's staff carpenters, welders, web developer and audio/visual technician will also work on this proposed project (\$15,000). The Zoo's Bio-Programs staff would review signage, hands-on interactives and technology components during design, development and production phases.	Pending	\$ 44,850	\$ -	\$ 44,850
In kind:		\$ -	\$ -	\$ -

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