



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

Date of Report: May 9, 2014
Date of Next Status Update Report: December 2014
Date of Work Plan Approval:
Project Completion Date: June 30, 2017
Does this submission include an amendment request? No

PROJECT TITLE: Moose Decline and Air Temperatures in Northeastern Minnesota

Project Manager: Michael A. Larson
Organization: Minnesota Department of Natural Resources
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Web Address: <http://www.dnr.state.mn.us/moose/index.html>

Location: Work will take place in St. Louis, Lake, and Cook Counties.

Total ENRTF Project Budget:	ENRTF Appropriation:	\$600,000
	Amount Spent:	\$0
	Balance:	\$600,000

Legal Citation: M.L. 2014, Chp. 226, Sec. 2, Subd. 5m

Appropriation Language:

\$600,000 the second year is from the trust fund to the commissioner of natural resources in cooperation with the University of Minnesota to study the physiology and behavior of adult moose and effects of female condition on calf production and survival to determine the impact of air temperature on moose population performance and decline. This appropriation is available until June 30, 2017, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: Moose Decline and Air Temperatures in Northeastern Minnesota

II. PROJECT STATEMENT:

Until recently, 2 geographically distinct moose (*Alces alces*) populations occurred in Minnesota (MN), one in the northwestern (NW) and the other in the northeastern (NE) part of the state. Since the mid-1980s the NW population has decreased from an estimated 4,000 to less than 100 moose, and since 2006 the NE population has declined 69% from an estimated 8,840 to 2,760 moose. Mean annual mortality rates of adults have been similarly high (21%) in both regions. Climate change has been implicated as an underlying factor in both population declines. There were inverse relationships between warming ambient temperatures and decreasing survival of adult moose. Unlike in the NW region, however, in the NE little is known about other potentially important factors contributing to the natural mortality of moose (e.g., predation, disease, parasites, undernutrition). Two aggressive companion studies are presently investigating specific causes of mortality and survival rates of adults and calves, and their quantitative impacts on performance (survival and reproduction) of the NE population.

Trends in temperature and precipitation patterns are likely to increase in intensity over the next century. If moose are unable to sufficiently thermoregulate above certain ambient temperature thresholds, we might expect to see increased body temperatures and energy expenditures required to stay cool, which over time could have negative consequences for body condition, reproduction, and survival. Currently, no data exist to support the direct adverse effects of ambient temperature on the physiology, survival, or reproduction of free-ranging moose.

The primary goal of our 3-year study is to thoroughly investigate how ambient temperatures relate to moose productivity, reproductive success, and survival in NE MN by applying an unprecedented field approach and comprehensive data collection methods. Recently, a minimally invasive telemetry system for ruminants, called a mortality implant transmitter (MIT), has been developed to allow nearly continuous monitoring of body temperature with a battery lifetime of ≥ 2 years. Using these MITs and global positioning system (GPS) collars on adult moose in this study will allow us to correlate ambient temperature with adult female physiology, behavior (habitat use and activity), and fitness (survival and reproduction). We will estimate the seasonal survival of 30 implanted moose, determine specific causes of mortality, and assess calf production. We also will estimate survival and determine the causes of mortality of calves by GPS-collaring 40 newborns. Presently, less is known about calf productivity, survival, and mortality factors than for adult moose in northern Minnesota.

This study will be the first to examine these relationships in a way that includes monitoring body temperature. The results of this study will be critical to an improved understanding of if, when, and how moose are able to successfully modulate their internal body temperature. In particular, we aim to determine if moose modify their activity and use available habitat in response to ambient temperatures, and to evaluate population performance. Such an understanding should prove valuable in the formulation of future population and habitat management strategies and activities.

III. PROJECT STATUS UPDATES:

Project Status as of December 2014:

Project Status as of June 2015:

Project Status as of December 2015:

Project Status as of June 2016:

Project Status as of December 2016:

Project Status as of June 2017:

Overall Project Outcomes and Results:

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Determine the physiological and behavioral impacts that ambient temperatures have on adult moose and determine specific causes of mortality.

Description: Global Positioning System (GPS) collars and mortality implant transmitters (MITs) will be deployed on 30 adult moose (approximately 22 females and 8 males) in January-February of 2015. Additionally, external ambient temperature loggers will be placed on each collar. The collars will notify the research team when a moose has died by way of a motion-sensitive switch in the collar and a subsequent text message. A network of strategically stationed response teams will reach moose within the critical 24 hours after death, ensuring the carcass and tissue samples are suitable for diagnostics. When possible, carcasses will be transported intact to a nationally-certified laboratory in Minnesota for a full diagnostic workup. Otherwise, trained field biologists will perform a thorough field examination (necropsy). Diagnostic screening for more than 30 diseases, toxicities and deficiencies will occur by Board-certified veterinary pathologists. Further, internal body temperature data will be compared to ambient temperatures to determine if moose alter their use of specific habitat types depending on ambient temperatures or their current physiological state.

Summary Budget Information for Activity 1:

ENRTF Budget: \$ 338,721
Amount Spent: \$ 0
Balance: \$ 338,721

Activity Completion Date: 6/30/2017

Outcome	Completion Date	Budget
1. Capture, collar, and implant 30 adult moose in the study area	6/30/2015	\$ 177,436*
2. Determine behavioral impacts of ambient temperature on moose	6/30/2017	\$ 103,189*
3. Continue to determine specific causes of mortality of moose that die during the study period	6/30/2017	\$ 58,096*
4. Quantifying rate of exposure to diseases and toxicity and nutritional deficiencies	6/30/2017	\$ 0**
5. Preliminary data analyses and final LCCMR report	6/30/2017	\$ 0**
6. Descriptive reports/articles in peer-reviewed publications addressing findings	6/30/2017	\$ 0**

* Of the \$338,721 for Activity 1, \$11,291 is for Direct & Necessary services to support the appropriation.

** Analyses and reports for Outcomes 4–6 will be completed through in-kind contributions of the lead investigators and others.

Activity Status as of December 2014:

Activity Status as of June 2015:

Activity Status as of December 2015:

Activity Status as of June 2016:

Activity Status as of December 2016:

Activity Status as of June 2017:

Final Report Summary:

ACTIVITY 2: Determine the potential effects of the condition and behavior of adult female moose on calf productivity and survival.

Description: Calving behavior and activity (i.e., movements) of all adult GPS-collared female moose will be intensely monitored in near real-time by several proven computer methods during May to early-June 2015 to determine pregnancy and overall calf production. GPS collars programmed to collect one location per hour will be deployed on 40 captured newborn (< 4 days old) moose calves (~20 females, 20 males) of GPS-collared dams also fitted with MITs. The twinning rate of the collared calves of dams will be used to estimate overall calf production. The GPS calf collars send a text message and email to our research response team within 6 hours of a calf mortality, allowing the team to initiate a field investigation within 12-24 hours. As with the adults, intact fresh carcasses of calves or remaining tissue samples will be transported to the Veterinary Diagnostic Laboratory at the University of Minnesota for diagnostic workup, or detailed necropsies will be conducted in the field. Prolonged physiological stress and behavioral responses to increased temperatures can have debilitating effects on the nutritional condition and overall health of adult moose, which can compromise their ability to become pregnant, fetal development, and survival of calves throughout their first year. Seasonal and annual survival and specific causes of mortality of the GPS-collared calves will be determined during their first year and relationships with ambient temperature, physiological status (i.e., body temperatures) and behavior (e.g., habitat use) of the dams will be examined.

Summary Budget Information for Activity 2:

ENRTF Budget: \$ 261,279
Amount Spent: \$ 0
Balance: \$ 261,279

Activity Completion Date: 6/30/2017

Outcome	Completion Date	Budget
1. Capture & collar 40 moose calves	6/30/2015	\$ 101,652*
2. Determine the relationship between physiological & behavioral responses of females and the production and survival of calves	6/30/2017	\$ 112,480*
3. Continue to determine specific causes of mortality of calves during their first year	6/30/2017	\$ 47,147*

* Of the \$261,279 for Activity 2, \$10,475 is for Direct & Necessary services to support the appropriation.

Activity Status as of December 2014:

Activity Status as of June 2015:

Activity Status as of December 2015:

Activity Status as of June 2016:

Activity Status as of December 2016:

Activity Status as of June 2017:

Final Report Summary:

V. DISSEMINATION:

Description: Annual research summaries addressing accomplishments to date will be written and available on the MNDNR website. Descriptive reports and articles will be written and submitted for publication in peer-reviewed journals.

Status as of December 2014:

Status as of June 2015:

Status as of December 2015:

Status as of June 2016:

Status as of December 2016:

Status as of June 2017:

Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget Overview:

Budget Category	\$ Amount	Explanation
Personnel:	\$ 121,000	1 Wildlife Health Specialist (\$74,000) – 43% FTE for 2 years to do field work for adult component, analyze data, & do outreach. 3 Field technicians (\$47,000) – 46% FTE each for 1 year to do field work for calf component.
Professional/Technical/Service Contracts:	\$ 214,795	Moose capture – Capture & handling 30 adult moose (\$48,000). Univ. of Minnesota – Field work & analysis for calf component (\$80,000), statistical consulting (\$26,795) & diagnostic lab analyses for adult and calf components (\$10,000). Satellite data acquisition – transmission of location, temperature, heart rate, & mortality data from adult moose (\$35,000) and calves (\$15,000). \$175/month plus a per-transmission fee.
Equipment/Tools/Supplies:	\$ 167,500	GPS collars for adult moose (\$75,000) & calves (\$55,000) – Collect moose location data, transmit temperature & heart rate data; competitive bid process to select vendor. Mortality implant transmitters (\$27,000) – Record body temperature & heart activity data from 30 adult moose. Air temperature loggers (\$4,500) – Record ambient air temperatures on 30 adult moose collars. Pharmaceuticals (\$6,000) – Drugs for immobilization of captured moose & reversal.
Travel Expenses in MN:	\$ 64,439	Fleet, mileage, lodging, & meals for project managers & field staff (\$56,939). Room & board for volunteer technician to do field work for calf component (\$7,500).
Other: Spotter plane	\$ 10,500	DNR aircraft (52 hours @ \$205/hour) for moose capture operations.

Other: Direct & Necessary costs	\$ 21,766	DNR Direct & Necessary services to support this appropriation (*see footnote).
TOTAL ENRTF BUDGET:	\$ 600,000	

* 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. For this work plan, activities contracted to the University of Minnesota with associated costs of \$116,795 have not been assessed Direct and Necessary costs.

Explanation of Use of Classified Staff: Funds will not be used to pay for classified staff.

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

Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation: 2.25 FTE

Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation: 0.7 FTE

B. Other Funds:

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state			
University of Minnesota, Veterinary Diagnostic Laboratory;(pathologists at 0.09 FTE for 2 yrs)	\$ 48,800	\$0	disease and health screening for dead moose
1854 Treaty Authority	\$ 25,000	\$0	capture & field necropsy support, supplies, equipment, spotter plane costs
Fond du Lac Resource Management Division	\$ 20,000	\$0	capture support, field necropsy support
Natural Resources Research Institute: Ron Moen	\$ 10,000	\$0	field necropsy support, data analyses
State			
MNDNR Wildlife Health Program: Michelle Carstensen; 24 mos, 50% effort	\$ 75,450	\$0	project management, field necropsies, analyze, write, outreach
MNDNR Forest Wildlife Populations & Research Group: Glenn D. DelGiudice; 24 mos, 50% effort	\$ 95,250	\$0	project management, fieldwork, data analysis, writing, outreach
MNDNR Wildlife Health Program: Erik Hildebrand; 24 mos, 25% effort	\$ 25,990	\$0	field data collection, field necropsies, outreach
MNDNR Wildlife Health Program: David Pauly; 24 mos, 57% effort	\$ 87,730	\$0	field data collection, field necropsies, outreach
TOTAL OTHER FUNDS:	\$ 388,220	\$0	

VII. PROJECT STRATEGY:

A. Project Partners:

Lead investigators—Dr. Michelle Carstensen (adult component, \$0 from the ENRTF appropriation) and Dr. Glenn D. DelGiudice (calf component, \$0), MN DNR.

Co-investigators—Natural Resources Research Institute (\$0) and University of Minnesota Department of Fisheries, Wildlife, & Conservation Biology (\$106,795).

Collaborators—Fond du Lac Resource Management Division (\$0), University of Minnesota Veterinary Diagnostic Laboratory (\$10,000), 1854 Treaty Authority (\$0), Minnesota Deer Hunters Association (\$0).

B. Project Impact and Long-term Strategy:

The results of serological screening for diseases; serum analyses for pregnancy testing, chemistry profiles, and metabolic hormones; and complete and differential blood cell counts will contribute to quantifying rates of exposure to diseases, pregnancy rates, and assist with assessment of overall health and physiological status. We will assess these results relative to seasonal and annual survival and cause-specific mortality rates.

Specific causes of death of collared moose (adults and calves) that die during the study period will be determined, contributing to our understanding of the specific role health-related factors and other mortality forces (e.g., undernutrition, predation) are playing in the overall decline of the NE moose population. Once the specific causes of mortality and major influential factors (i.e., nutritional condition, seasonal weather conditions) are identified, appropriate population and habitat management actions may be taken to address the population's decline.

The primary goal of our 3-year study is to thoroughly investigate how ambient temperatures relate to moose productivity, reproductive success, and survival in NE MN by applying an unprecedented field approach and comprehensive data collection methods. No other study has documented a relationship between ambient temperature, body temperature (measured in free-ranging moose), and other variables which may influence this relationship (e.g., activity, habitat use). However, our study design also will allow us to re-examine and extend survival relationships reported by Lenarz et al. (2009, 2010). After a 6-year study of adult moose in NE MN, Lenarz et al. (2009) documented lower annual survival rates (relative to non-anthropogenic sources of mortality) of moose compared to populations ranging farther north. They also reported several significant inverse relationships between annual and seasonal survival rates and increasing ambient temperatures, and they observed higher mortality rates than expected during non-winter months. Those findings implicated climate change as a potentially significant factor influencing the decline of Minnesota's NE moose population (Lenarz et al. 2009, 2010). The additional survival data generated from our study, increased study period, and re-examinations of relationships between survival and ambient temperatures, coupled with the behavioral data and habitat needs identified by the current moose study of Moen (2009), will provide insight into whether the statistical relationships previously reported are real and ecologically significant, or spurious, perhaps attributable to limited sample sizes and data collection over a relatively brief period of time. Improved understanding of how climate, diseases, parasites, nutrition, and habitat needs may be influencing the population performance of moose will be key to the development of future population and habitat management strategies. Sharing what we conclude from these expanded data analyses and the information synthesized at professional meetings and through publication in peer-reviewed, scientific journals will likely expand the value of the study to other geographic regions, as well as to the scientific study and management of other species.

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
M.L. 2011 ENRTF funding for "Determining causes of death in declining moose population"				\$ 600,000	
MNDNR, Wildlife Health Program for Adult Mortality Study				\$ 163,141	\$ 58,359
MN DNR, Section of Wildlife for Calf Mortality Study				\$ 220,000	\$ 221,397
TOTAL SPENDING HISTORY:				\$ 983,141	\$ 279,756

VIII. ACQUISITION/RESTORATION LIST: N/A

IX. VISUAL ELEMENT or MAP(S): See attached map.

X. ACQUISITION/RESTORATION REQUIREMENTS WORKSHEET: N/A

XI. RESEARCH ADDENDUM: See attached Research Addendum.

XII. REPORTING REQUIREMENTS:

Periodic Work Plan status update reports will be submitted not later than December 2014, June 2015, December 2015, June 2016, December 2016, and June 2017. A final report and associated products will be submitted between June 30 and August 15, 2017 as requested by the LCCMR.

Environment and Natural Resources Trust Fund
M.L. 2014 Project Budget

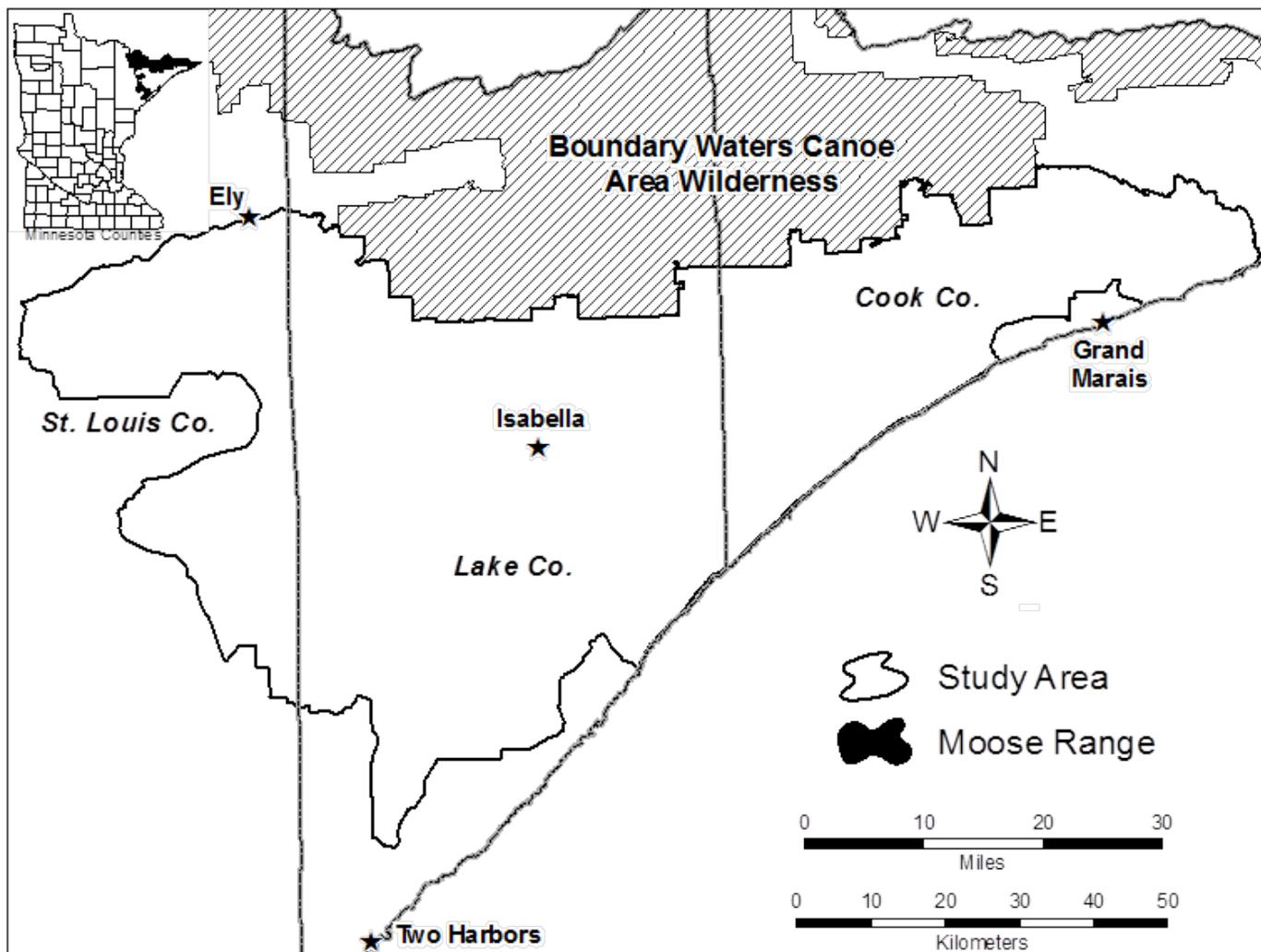
Project Title: Moose Decline and Air Temperatures in Northeastern Minnesota
Legal Citation: M.L. 2014, Chp. 226, Sec. 2, Subd. 5m
Project Manager: Michael A. Larson
Organization: Minnesota Department of Natural Resources
M.L. 2014 ENRTF Appropriation: \$600,000
Project Length and Completion Date: 3 Years, June 30, 2017
Date of Report: May 7, 2014



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Activity 1 Balance	Activity 2 Budget	Amount Spent	Activity 2 Balance	TOTAL BUDGET	TOTAL BALANCE
BUDGET ITEM	Determine effects of temperatures on adult moose.			Determine effects of female condition & behavior on calf moose.				
Personnel (Wages and Benefits)								
Wildlife Health Specialist (\$74,000) - 1 person, 0.43 FTE year-round for 2 years, 75% salary & 25% benefits; Field technicians (\$47,000) - 2 people for 180 days (0.46 FTE each) during spring/summer 2015, 1 person for 240 days (0.46 FTE) during fall 2015	\$74,000	\$0	\$74,000	\$47,000	\$0	\$47,000	\$121,000	\$121,000
Professional/Technical/Service Contracts								
Wildlife helicopter capture company to capture & handle 30 adult moose, competitive bid	\$48,000	\$0	\$48,000				\$48,000	\$48,000
Univ. of Minnesota for graduate student (0.5 FTE for 2 years) to lead field work & analyses for calf component				\$80,000	\$0	\$80,000	\$80,000	\$80,000
Univ. of Minnesota for statistical consultant (0.21 FTE, 83% salary & 17% benefits, spread across 3 years) for data analysis and modeling	\$13,400	\$0	\$13,400	\$13,395	\$0	\$13,395	\$26,795	\$26,795
Univ. of Minnesota Veterinary Diagnostic Lab for analyses of samples from captured and dead moose.	\$5,000	\$0	\$5,000	\$5,000	\$0	\$5,000	\$10,000	\$10,000
Satellite data acquisition for locations, heart rates, temperatures, & mortalities of adult moose; competitive bid	\$35,000	\$0	\$35,000				\$35,000	\$35,000
Satellite data acquisition for locations & mortalities of calf moose, competitive bid				\$15,000	\$0	\$15,000	\$15,000	\$15,000
Equipment/Tools/Supplies								
30 GPS collars for adult moose to record & transmit animal location data, competitive bid	\$75,000	\$0	\$75,000				\$75,000	\$75,000
40 GPS collars for calf moose to record & transmit animal location data, competitive bid				\$55,000	\$0	\$55,000	\$55,000	\$55,000
30 Mortality implant transmitters to record heart activity & body temperatures of adult moose	\$27,000	\$0	\$27,000				\$27,000	\$27,000
30 Air temperature loggers to record ambient air	\$4,500	\$0	\$4,500				\$4,500	\$4,500
Pharmaceuticals for immobilization of captured moose	\$6,000	\$0	\$6,000				\$6,000	\$6,000
Travel expenses in Minnesota								
Fleet, mileage, lodging, & meals for project managers and field staff	\$29,030	\$0	\$29,030	\$27,909	\$0	\$27,909	\$56,939	\$56,939
Lodging & meals for 2 volunteer technicians				\$7,500	\$0	\$7,500	\$7,500	\$7,500
Other								
Spotter airplane for moose captures	\$10,500	\$0	\$10,500				\$10,500	\$10,500
Direct & necessary services to support this appropriation	\$11,291	\$0	\$11,291	\$10,475	\$0	\$10,475	\$21,766	\$21,766
COLUMN TOTAL	\$338,721	\$0	\$338,721	\$261,279	\$0	\$261,279	\$600,000	\$600,000



MAP of the study area for the “Moose Decline and Air Temperatures” project in northeastern Minnesota





May 12, 2014

Susan Thornton, Director
Legislative-Citizen Commission on Minnesota Resources
100 Rev. Dr. Martin Luther King Jr. Boulevard
State Office Building, Room 65
St. Paul, Minnesota 55155

Re: Revisions to Work Plan for Moose Decline and Air Temperatures in Northeastern MN (016-A)

Dear Ms. Thornton:

I made the following revisions to the attached Word document:

- As suggested by reviewers of the Research Addendum, we changed how we first described MITs in the Project Statement and changed “air” to “ambient” when referring to ambient air temperatures throughout the document.
- Changed all references to the number of moose calves that will be collared to “40.” Previously, in some cases we had used “30–50.”
- Changed some of the dollar amounts and explanations in table VI. A. (ENRTF Budget Overview). These changes are specified in more detail below in this memo.

The following revisions to the budget for Activity 2, in both the attached Excel and Word files, were due to changing plans from capturing most moose calves with a helicopter operation to capturing calves with only ground-based operations, which addresses concerns we and reviewers of the Research Addendum had about potentially negative effects of disturbance from a helicopter on calves and dams:

- Eliminated the \$58,000 for a helicopter contract for capturing moose calves.
- Eliminated the \$10,000 for a spotter airplane for capturing moose calves.
- Increased spring field technician salaries by \$9,400 for 180-day appointments rather than 120-day appointments.
- Increased travel expenses for field staff and project managers by \$9,367.
- Increased travel expenses for volunteers by \$3,000.

I made the following additional revisions, and the reason for each one is embedded within:

- Increased fall technician salary for Activity 2 by \$9,400 because we learned by experience during late-2013 that we need that technician for twice as long as originally planned.
- Increased travel expenses for field staff and project managers for Activity 2 by \$9,303 because of underestimates in the previous budget.
- Increased travel expenses for volunteers for Activity 2 by \$1,500 because inexpensive field housing with the USDA Forest Service is no longer available.
- Increased fleet for Activity 1 by \$26,030 to reflect actual anticipated costs of approximately \$2,500 per month for 1 year. To stay within the \$600,000 that the LCCMR recommended for



our project, which was \$140,000 less than we had originally estimated for project costs, I had planned to pay for most of the fleet costs for Activity 1 with other funding sources. I had not included these costs in table VI. B. (Other funds), however, because those other funding sources had not yet been identified.

Please let me know if you have any questions about the changes I have made to the Work Plan.

Sincerely,

Michael A. Larson, Ph.D.
Forest Wildlife Populations & Research Group

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: **FAW**

Project Title: Moose Decline and Air Temperatures in Northeastern Minnesota

Request (before D&N)	Fee Title or Easement Acquisition	Pass-through Grants	Single-source Contract		Metric	Metric Value	Number of Units	Total D&N
\$ 600,000	\$ -	\$ -	\$ 116,795	People Support	FTE	\$ 1,326	1.87	\$ 2,480
				Safety Support	FTE	\$ 328	1.87	\$ 613
				Financial Support	All Other Costs	\$ 0.013	\$461,439	\$ 5,999
				Communication Support	Altmnts	\$ 1,141	1	\$ 1,141
				IT Support	IT User ID	\$ 2,273	1.21	\$ 2,750
				Planning Support	Altmnts	\$ 704	1	\$ 704
				Procurement Support	Altmnts	\$ 235	1	\$ 235
				Division Direct (project)	Cost/dollar (.0170)	0.0170		\$7,844
				Division Direct (program)	Cost/dollar (.0456)	0.0000		\$0
Total Direct & Necessary:								\$ 21,766
Costs before Direct and Necessary:								\$ 578,234
Total Project Costs:								\$ 600,000

Position Title	Staff Funded by Program/Project				FTE-Year Units	User ID - Year Units
	FTE's Funded	Years	User ID's Needed	Years		
Wildlife Tech	0.44	2	0.44	2	0.88	0.88
Temp Staff	0.66	1	0	0	0.66	0
Field Tech	0.33	1	0.33	1	0.33	0.33
					0	0
					0	0
					0	0
					0	0
Sum:					1.87	1.21

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)

