Environment and Natural Resources Trust Fund
2010 Request for Proposals (RFP)

LCCMR ID: 158-E2

Project Title:

Influence of Forest Landscapes on Ruffed Grouse Numbers

LCCMR 2010 Funding Priority:

E. Natural Resource Conservation Planning and Implementation

Total Project Budget: $ $103,400

Proposed Project Time Period for the Funding Requested: 3 years, 2010 - 2013

Other Non-State Funds: $ $0

Summary:

We will predict impacts of proposed or expected forest changes in Minnesota on ruffed grouse by examining grouse numerical responses to landscapes dominated by either aspen or conifer forests

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Location:

Region: Regional

County Name: Statewide

City / Township:

_____ Knowledge Base _____ Broad App. _____ Innovation

_____ Leverage _____ Outcomes

_____ Partnerships _____ Urgency _____ TOTAL

MAIN PROPOSAL

PROJECT TITLE: Influence of Forest Landscapes on Ruffed Grouse Numbers

I. PROJECT STATEMENT

Ruffed grouse are defining features of Minnesota forests, and are the most popular game bird in the state. The association between ruffed grouse and aspen forests is well known, but their habitat associations at the landscape scale are not. Recent management plans for state and national forests prescribe reductions in the aspen forest and increases in conifer forest. It is uncertain what effects such changes will have on ruffed grouse populations.

The question, "what determines ruffed grouse numbers?" is confounded by the simultaneous influences of their habitat relationships and their cyclic fluctuations. Thus, we began a long-term study (see long-term strategy below) to tease apart the influence of these two factors. We will determine which characteristics of forest composition and structure are most highly correlated with the numbers of ruffed grouse. We will accomplish this by intensively surveying for male grouse during the spring and recording characteristics of the habitats they use. This information can be used to predict consequences of proposed forest management changes and help guide grouse management. Because grouse (and other important species like deer) achieve their highest densities in aspen forests, we feel our studies will be essential to mitigating potential conflicts between those desiring more grouse and deer and those wishing to restore forest to "pre-settlement-like" conditions. Our research is important not only for state-managed forests but for all forests (national and private) in Minnesota.

II. DESCRIPTION OF PROJECT RESULTS

Result 1: Landscape habitat selection throughout a population cycle **Budget:** $66,400

Ruffed grouse numbers vary dramatically over a 10-year cycle. Grouse habitat selection differs throughout this cycle. Thus, it is necessary to understand habitat selection throughout both the decline and increase phases of the population cycle. We began a long-term study at Cloquet in 2002, but the Cloquet study needs to continue for the next 4 consecutive spring seasons (i.e., 2009-2012 [LCCMR funding request is for years 2010-2012]) to complete sampling over the current cycle because this current cycle appears to be showing an extended trend (see below).

Deliverables	**Completion Date**
1. Recommendations to the DNR about the implications of ruffed grouse habitat selection and their proposed forest management plans	June 30, 2013
2. Manuscripts submitted for peer-reviewed publication	Dec. 31, 2013

Result 2: Habitat selection in aspen- and conifer-dominated landscapes **Budget:** $37,000

Results of the on-going research at Cloquet have shown that both the proportion of aspen forest and the arrangement of all forest types are correlated with ruffed grouse densities. However, a uniform arrangement of forest types also tends to occur where there is a high proportion of aspen. To tease apart these two influences we began a 3-year project at Red Lake WMA. With LCCMR funding we will complete the final year of this 3-year project.

Deliverables	Completion Date
1. Graduate thesis, including recommendations for forest management	May 31, 2011
2. Manuscripts submitted for peer-reviewed publication	Dec. 31, 2011

III. PROJECT STRATEGY

A. Project Team/Partners

Dr. R. J. Gutiérrez, University of Minnesota – will supervise the research at Cloquet and co-advise the graduate student research at Red Lake WMA.

Dr. Michael A. Larson, Minnesota DNR – will co-advise the graduate student research at Red Lake WMA.

B. Timeline Requirements

Cloquet Research: This study began in 2002. The first phase of this was completed in 2005 with a dissertation on multiscale habitat relationships of the grouse. The second phase began in 2006 and will be completed in 2009 with a dissertation on the behavioral dynamics of grouse habitat selection. However, the Cloquet population, and much of Minnesota's grouse population has shown only a modest (15%) increase over the past two years (2007 and 2008). Thus, if the cycle were perfectly in phase with the average 10-year cycle, we could complete the Cloquet research in 2011, but we expect that the cycle will be extended in duration so we believe an 11th year of field sampling (i,e., in 2012) will be required to monitor grouse habitat selection through all phases of a cycle. One of the PIs (Gutiérrez) will be responsible for supervising the final two years of field work and writing a monograph using all data collected over the 11 years study.

Red Lake WMA Research: The research began in 2008 with the recruitment of a graduate student to conduct this study. The student will conduct two field seasons (2009 and 2010). This should provide sufficient data to answer the key question of interest (see Long-Term Strategy below). Following her field work she will analyze her data and write an M.S. thesis.

C. Long-Term Strategy

Cloquet Research: This has been a long-term project. Ruffed grouse have been studied at Cloquet for about 60 years. Our current project built upon this research foundation by examining specific hypotheses tested with advanced analytical techniques. These hypotheses were designed to address practical questions asked by forest and wildlife managers. Thus far, the University of Minnesota (UMN) and the Minnesota Agriculture Experiment Station have committed $400,000 to this long-term project, but future funding has been dramatically reduced. Thus far, 6 peer-reviewed scientific papers have been published on this 7-year research project.

Red Lake WMA Research: This short-term project is synergistic with the Cloquet project. It attempts to answer a key question: "are the Cloquet results unique to Cloquet or do they represent general patterns for all Minnesota ruffed grouse?" This question is essential for the Minnesota DNR because of their proposed plans to convert forest types (see above), which may be detrimental to grouse and, hence, potentially raise substantial controversy among hunters. This study is a collaborative venture between the UMN and the Minnesota DNR. This study was designed to randomly select landscapes for study that reflected different compositions of forest using the same rigorous methods we have used at Cloquet. UMN provided a diversity fellowship for the first year the student's M.S. program, and the Minnesota DNR is funding all of her field work. In addition, the student is co-advised by two scientists, one from UMN and one from DNR. Thus, this research is collaborative in two respects: funds and student advisement.

Project Budget

PROJECT TITLE: Ruffed Grouse Research

IV. TOTAL PROJECT REQUEST BUDGET (3 years)

BUDGET ITEM	AMOUNT
Personnel:	
1 graduate student, half-time for 11 months (~17% toward benefits, remainder as salary), to complete analysis & writing related to 2009-2011 field project at Red Lake WMA	$ 37,000
2 field crew leaders, full-time for 4 months each in 2 separate calendar years (100% salary), to lead data collection at Cloquet study area	$ 22,000
4 field assistants, full-time for 4 months each, 2 each in 2 separate calendar years (100% salary), to collect data at Cloquet study area	$ 39,000
Equipment/Tools/Supplies: Miscellaneous field supplies (e.g., batteries for GPS units and headlamps, tree paint and flagging to mark survey routes, notebooks to write field notes, supplies to fix grouse traps, supplies for collecting and storing fecal samples)	$ 3,000
Travel: Housing at Cloquet study area for 4 months in each of 2 years	$ 2,400
Additional Budget Items: *In this column, list any additional budget items that do not fit above categories. List by item(s) or item type(s) and explain how number was reached.*	$ -
TOTAL PROJECT BUDGET REQUEST TO LCCMR	$ 103,400

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ Being Applied to Project During Project Period: *Indicate any additional non-state cash $ to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.*	$ -	*Indicate: Secured or Pending*
Other State $ Being Applied to Project During Project Period: *Indicate any additional state cash $ (e.g. bonding, other grants) to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are*	$ -	*Indicate: Secured or Pending*
In-kind Services During Project Period: *Indicate any in-kind services to be provided during the funding period. List type of service(s) and estimated value. In-kind services listed must be specific to the project.*	$ -	
1 DNR PI, 1/4-time for 12 months	$ 19,000	
Funding History: *Indicate funding secured prior to July 1, 2010 for activities directly relevant to this specific funding request. State specific source(s) of funds.*		
DNR award for research at the Red Lake study area in 2009	$ 75,500	
Univ. of MN funding for research at Cloquet study area during 2001-2008	$ 395,700	

Project Manager Qualifications and Organization Description

Project Manager/Partner – Ralph J. Gutiérrez

Rocky Gutiérrez is Professor and Gordon Gullion Endowed Chair in the Department of Fisheries, Wildlife, and Conservation Biology, University of Minnesota, St. Paul, MN. He received his B.S. in Wildlife Biology (Colorado State University), his M.S. in Biology (University of New Mexico), and his Ph.D. in Zoology (University of California, Berkeley). He held previous positions at Cornell and Humboldt State Universities. He has studied game bird ecology, population dynamics, and forest wildlife management for the past 37 years, which are topics consistent with the specific intent and mission of the Gullion Endowed Chair. To that end he has published 122 peer-reviewed scientific papers, 1 book, and helped edit 8 major scientific or management documents. Six of his recent (past 5 years) publications have been on Minnesota ruffed grouse resulting from long-term studies he and his students have initiated in Minnesota. He has been asked to participate in many (7) major national review teams applying science to solving forest wildlife management problems. He has guided 39 graduate students and more than 50 undergraduate students to graduate or undergraduate theses.

The University of Minnesota is the state's land grant institution and is dedicated to serving the needs of the citizens of Minnesota through education, research, and outreach.

Project Manager/Partner - Michael A. Larson

Mike Larson is a Wildlife Research Scientist for the Minnesota Department of Natural Resources (DNR) in Grand Rapids. He is the state's Grouse Biologist, with responsibilities for surveys of and research on ruffed grouse, spruce grouse, sharp-tailed grouse, and prairie-chickens. Mike is also an Adjunct Assistant Professor in the Department of Fisheries, Wildlife, and Conservation Biology at the University of Minnesota in St. Paul. He earned Master's and Ph.D. degrees in wildlife ecology from Michigan State University and the University of Missouri.

The mission of the DNR is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life. The mission of the DNR's Section of Wildlife is to work with the people of Minnesota to conserve and manage wildlife populations and habitats, to provide wildlife-related recreation, and to preserve Minnesota's hunting and trapping heritage.