

**Environment and Natural Resources Trust Fund
2018 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 016-A

Conservation of Minnesota's Forest Birds of Management Concern

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: \$ 613,998

Proposed Project Time Period for the Funding Requested: 3 years, July 2018 to June 2021

Summary:

Identify forest management actions and guidelines that maximize breeding season productivity across breeding cycle (nesting through post-fledgling) for three bird species of conservation concern: Golden-winged Warbler, Veery, and American Woodcock.

Name: Alexis Grinde

Sponsoring Organization: U of MN - Duluth NRRI

Address: 5013 Miller Trunk Highway
Duluth MN 55811-1442

Telephone Number: (320) 496-0016

Email agrinde@d.umn.edu

Web Address _____

Location

Region: Central, Northwest, Northeast

County Name: Aitkin, Beltrami, Carlton, Cass, Cook, Crow Wing, Hubbard, Itasca, Koochiching, Lake, Lake of the Woods, Mille Lacs, Pine, St. Louis

City / Township:

Alternate Text for Visual:

There are pictures of each focal species, Golden-winged Warbler, Veery, and American Woodcock. Pictures of species' nests with eggs are subset with in each species image. There are also three images of potential breeding habitat for the focal species. The habitat images show sites with different forest management characteristics including differences in dominant cover type, the amount of retained trees, and the density of ground and shrub cover. Our project will determine what forest management actions maximize the breeding season productivity for the three focal species.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



Environment and Natural Resources Trust Fund (ENRTF)

2018 Main Proposal

Project Title: Conservation of Minnesota’s Birds of Management Concern

PROJECT TITLE: Conservation of Minnesota’s Forest Birds of Management Concern

I. PROJECT STATEMENT

Our project will identify forest management actions that maximize breeding season productivity for three bird species of conservation concern. We will focus on Golden-winged Warbler, Veery, and American Woodcock, these species have significant population declines throughout their breeding ranges and all have a large portion of their breeding populations in Minnesota’s young forests. Our focal species have been identified as Species in Greatest Conservation Need (SGCN) by MN DNR and as Stewardship Birds of Minnesota by Audubon Minnesota.

- **Golden-winged Warbler** is one of the most critically threatened birds in North America with a global population estimated at only about 400,000 individuals. Approximately 50% of the global population of Golden-winged Warblers nest in Minnesota.
- **Veery** populations have experienced an overall global decline of over 40% from 1970 to 2014; approximately 880,000 (6%) of its global breeding population occurs in Minnesota’s forests.
- **American Woodcock** populations have declined by over 30% in North America in the past 50 years. Approximately 10% of the global population breeds in Minnesota.

Minnesota’s managed forests play an important role in the long-term conservation of these species. Densities of these breeding birds are highest in young, wet forests - habitat that is increasingly threatened in Minnesota due to urbanization, agricultural development, and maturation of early succession forests across the state. Historically, periodic disturbances would create habitat for these species—wildfires or flooding from beaver dams created a patchwork shrubby openings amid a largely forested landscape. Currently, the major mechanism of disturbance is harvest, providing an important opportunity for habitat management of these species. We will use radio-telemetry data to determine how different forest-management treatments impact species survival, movement patterns, and local occupancy throughout the breeding cycle (nesting through post-fledgling periods).

Our specific objectives are to:

1. Quantify nesting habitat, nest success, and juvenile survival for Golden-winged Warbler, Veery, and American Woodcock in managed forests.
2. Quantify habitat use of Golden-winged Warbler, Veery, and American Woodcock juveniles during the post-fledgling period within managed forest plots in Minnesota.
3. Provide breeding cycle habitat management recommendations for managing landscapes to maximize Golden-winged Warbler, Veery, and American Woodcock productivity and conservation.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Assess nesting habitat requirements for Golden-winged Warbler, Veery, and American Woodcock. Budget: \$217,711

We will utilize data collected from long-term study areas in managed forests of northern Minnesota to identify areas of high species density to focus our nest searching efforts. We will use a combination of standard mist netting and nest searching methods to find Golden-winged Warbler, Veery, and American Woodcock nests. We will attach radio transmitters to adults of each species to identify location of nests. Upon finding nests, we will record their location and monitor their progress via remote nest cameras and conduct visual inspections on a three day interval.

Outcome	Completion Date
1. Locate and monitor Golden-winged Warbler, Veery, and American Woodcock nests in the 2019 and 2020 breeding seasons.	August 2020
2. Evaluate factors associated with nest success and hatchling survival.	December 2020

Activity 2: Assess habitat use of juvenile Golden-winged Warbler, Veery, and American Woodcock. Budget: \$289,451



Environment and Natural Resources Trust Fund (ENRTF)

2018 Main Proposal

Project Title: Conservation of Minnesota’s Birds of Management Concern

Woodcock

We will randomly choose juvenile birds from each nest to tag with radio-transmitters. Juveniles will be tracked daily using a combination of ground telemetry methods and / or unmanned aerial vehicles (UAV) to identify movements for approximately 20 days. Cover type and stand features will be recorded to determine habitat use.

Outcome	Completion Date
1. Tag juveniles with radio-transmitters as they approach the fledgling stage of development in the 2019 and 2020 breeding seasons.	August 2020
2. Track juveniles daily and record habitat use for 14-21 days during the 2019 and 2020 post-breeding season.	August 2020
3. Document and evaluate juveniles space use and movement in relation to available cover type and forest structure.	December 2020

Activity 3: Develop forest management strategies to maximize Golden-winged Warbler, Veery, and American Woodcock productivity. Budget: \$106,836

Findings from Activities 1 and 2 will be integrated to establish habitat management guidelines that account for the interrelationships among nesting and juvenile habitat use and survival. Habitat guidelines will identify cost effective forest management strategies that improve, protect, and enhance young forest habitats to maximize breeding season productivity of focal species.

Outcome	Completion Date
1. Compilation and integration of nesting and juvenile habitat use.	February 2021
2. Development of habitat management guidelines to be used by land managers to maximize breeding season productivity of focal species.	June 2021

III. PROJECT STRATEGY

A. Project Team/Partners

The project team includes Dr.’s Alexis Grinde and Gerald Niemi from Natural Resources Research Institute, University of Minnesota, Duluth, Cheryl Adams and Sawyer Scherer from UPM Blandin Corporation.

B. Project Impact and Long-Term Strategy

The project is an extension of a long-term study (20 year) that has documented the impacts of forest management on Minnesota’s breeding birds. This project will provide the data to assess habitat use of three species of conservation concern to better understand habitat associations across their entire breeding cycle. The results from this study will determine how large forest patch cuts should be designed and identify habitat attributes that optimize nesting and brood-rearing success for these species. Identification and implementation of science-based best management practices that create or maintain Golden-winged Warbler, Veery, and American Woodcock breeding habitat is an important step towards sustaining and enhancing populations of these species in the state, plus reversing the widespread population declines observed throughout their breeding ranges. Project partners will use the results of this study to identify and improve forestry practices to benefit Minnesota’s birds. Findings will be used by public and private land managers to facilitate the planning of landscapes that maximize Golden-winged Warbler, Veery, and American Woodcock breeding season productivity ultimately conserve Minnesota’s bird species. Findings and data generated from this project will also serve as a foundational resource to prioritize and assess future threats to Minnesota’s birds.

C. Timeline Requirements

Two full field seasons are required with an additional year of data analysis and reporting for a total of three years.

2018 Detailed Project Budget

Project Title: Conservation of Minnesota's Forest Birds of Management Concern

IV. TOTAL ENRTF REQUEST BUDGET: 3 years

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
Personnel:	
Alexis Grinde, Principal Investigator (66.5% salary, 33.5% benefits); 25% effort each year for 3 years	\$ 82,077
Research Scientists (2), Fieldwork, Data Collection and Analysis(66.5% salary, 33.5% benefits); 100% cumulative effort each year for 3 years	\$ 207,831
Bird Banders (2) (92.3% salary, 7.7% benefits); 100% cumulative effort 1 month per year in Y1 and Y2	\$ 11,424
Undergraduate Research Assistant (100% salary); 50% effort each year in Y1 and Y2	\$ 20,800
Field Technicians (4) (92.3% salary, 7.7% benefits); 100% cumulative effort 3 months per year for 3 years	\$ 120,966
Equipment/Tools/Supplies:	
VHF Radio receivers: 4 at \$5,000 each, purchased in Y1	\$ 20,000
4 unmanned aerial vehicles (UAVs) will be used to mount the recivers and track fledglings over large distances @ \$6000 ea	\$ 24,000
240 transmittters (\$240 ea.) to attach to birds to track their movements	\$ 57,600
GPS units to map precise locations of fledglings: 3 units each year in Y1 and Y2; 6 total at \$300 each	\$ 1,800
Nest cameras: 30 at \$150 each, purchased in Y1	\$ 4,500
10 automated telemetry stations to track long-range movements in remote locations (\$4800 ea.)	\$ 48,000
Travel:	
Travel for fieldwork, including mileage (75%) and lodging (25%) for Field Crew and Banders. Mileage will be reimbursed at \$0.535/mile (University of MN rate). Lodging is estimated between (\$90-\$130 per night). The forest study sites are in remote areas and the nature of the study requires consistent (daily) monitoring for 8-12 weeks each field season	\$ 15,000
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 613,998

V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
Other Non-State \$ To Be Applied To Project During Project Period:	N/A	
Other State \$ To Be Applied To Project During Project Period:	N/A	
In-kind Services To Be Applied To Project During Project Period:		
In-kind support from Sawyer Scherer, Forest Ecologist, UPM Blandin Corporation for services including site selection, site mainenance, GIS, and forestry consultation. 25 hours per year @ \$100/ hour for 3 years	\$ 7,500	Secured
Unrecovered indirect: 54% MTDC, \$569,998 base (total direct costs minus equipment)	\$ 307,799	Secured
Past and Current ENRTF Appropriation:	N/A	
Other Funding History:	N/A	

Breeding habitat for Golden-winged Warbler, Veery, and American Woodcock



Which forest management actions maximize breeding season productivity?



Golden-winged Warbler



Veery



American Woodcock



PROJECT TITLE: Conservation of Minnesota's Forest Birds of Management Concern

2018 LCCMR Project Manager Qualifications and Organization Description

Dr. Alexis Grinde, Natural Resources Research Institute, University of Minnesota Duluth

Key Qualifications

Dr. Grinde is a Wildlife Ecologist and Research Lab Manager at the Natural Resources Research Institute, University of Minnesota Duluth. She has over 15 years of research experience focusing on conservation ecology.

EDUCATION

Ph.D. Integrated Biological Sciences. University of Minnesota, Duluth. **Thesis:** Spatio-temporal Ecology of Forest Birds. **Adviser:** Dr. Gerald Niemi.

M.S. Biology. University of North Dakota. **Thesis:** Ecological effects of wild pigs in California's oak woodlands. **Adviser:** Dr. Rick Swietzer.

B.S. Biology. Bemidji State University. **Thesis:** The Effects of Rainfall on Number of Nest Initiation Attempts by Nene in Hawaii Volcanoes National Park. **Adviser:** Dr. Elizabeth Rave.

RELEVANT RESEARCH EXPERIENCE

Wildlife Ecologist. Natural Resources Research Institute, University of Minnesota Duluth. **Supervisor:** Dr. Gerald Niemi. **Duties performed:** Grant writing, project coordination, manuscript preparation, presentations, and analysis of "Avian Responses to Climate Change in Chippewa National Forest, Minnesota", "Importance of young forests for breeding bird communities in Minnesota's forests", "Evaluation of Tree Retention Guidelines Pertaining to Wildlife", and "Determine Impacts on Wildlife From Emerald Ash Borer Infection of Black Ash Forests" projects.

PUBLICATIONS

Grinde, A.R. and G.J. Niemi. 2016. Influence of landscape, habitat, and species co-occurrence on occupancy dynamics of Canada Warblers. *The Condor*: August 2016, Vol. 118, No. 3, pp. 513-531.

Grinde, A.R. and G.J. Niemi. 2016. A Synthesis of Species Interactions, Metacommunities, and the Conservation of Avian Diversity in Hemiboreal and Boreal Forests. *Journal of Avian Biology*.

Niemi, G.J., R.W. Howe, B.R. Sturtevant, L.R. Parker, **A. Grinde**, N.P. Danz, M. Nelson, E.J. Zlonis, N.

Walton, E. Gnass Giese and S.M. Leitz. 2016. Analysis of long term forest bird monitoring in national forests of the western Great Lakes Region. General Technical Report NRS-159. Newton Square, PA; U.S. Department of Agriculture, Forest Service, Northern Research Station, 322 p.

Niemi, G.J., J.D. Bednar, E.L. Condon, **A.R. Grinde**, K.A. Harrington, S.M. Hoheisel, M.J. Joyce, H.G. Panci, J.M. Terry, B.J. Vetter, and R.L. Ward. 2013. Book Review: *Community Ecology*. *Auk* 130:817-818.

The Natural Resources Research Institute is a part of the University of Minnesota Duluth. NRRI's mission is to promote private sector employment based on natural resources in an environmentally sensitive manner.