

**Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 055-AH

Rapid Assessment of Wildlife Habitat for Environmental Review

Category: H. Proposals seeking \$200,000 or less in funding

Sub-Category: A. Foundational Natural Resource Data and Information

Total Project Budget: \$ 178,000

Proposed Project Time Period for the Funding Requested: June 30, 2022 (2 yrs)

Summary:

Creation of a highly accessible and versatile online application for use by natural resource professionals to rapidly assess the implications of current or proposed forest management on wildlife habitat.

Name: John Zobel

Sponsoring Organization: U of MN

Job Title: Dr.

Department: Dept. of Forest Resources

Address: 1530 Cleveland Ave N
St. Paul MN 55108

Telephone Number: (612) 624-7281

Email izobel@umn.edu

Web Address: _____

Location:

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

Map of model estimated habitat changes over time for five individual species. Also included are images showing examples of included species in the model (birds, mammals, and herptofauna).

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



PROJECT TITLE: Rapid assessment of wildlife habitat for environmental review

I. PROJECT STATEMENT

Planning for forest and associated habitat management remains critical to evaluating the impact of proposed management activities on wildlife in Minnesota. Typical planning efforts have attempted to quantify the magnitude and extent of changes in wildlife habitat related to current or proposed forest management plans, but with only modest success for a few species. Among neighboring states, Minnesota typically requires the highest level of detail and rigor during forest management plan reviews. This is especially true for forest industry development projects and their review (via Environmental Assessment Worksheet and/or Environmental Impact Statement). In such cases completing the review requires considerable time and expense that discourages such planning, regardless of potential benefits. To address these problems, continuing research since the statewide Generic Environmental Impact Statement (GEIS¹) has led to the development of a forest wildlife habitat model as a tool to assist natural resource professionals through rapid assessment of changes for short- and long-term projections. This project will extend this tool into a highly accessible and versatile online application for use by natural resource professionals in county, Department of Natural Resources, Forest Service, non-governmental organizations, and others tasked with forest management planning and environmental review. This habitat model includes sub-models for 172 native Minnesota wildlife species including several threatened, endangered, and special concern species and has demonstrated capability for assessing habitat change over more than four decades of forest management. In brief, the model will provide a rigorously developed tool for local, regional and statewide planning and project analysis that will substantially reduce planning and review time and costs throughout the state.

¹ Research on forest wildlife habitat models that began with the GEIS on Timber Harvesting and Forest Management in the early 1990s.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Request and incorporate peer-review from wildlife professionals **ENRTF BUDGET: \$ 16,486**

The basic wildlife habitat model was developed by over 25 wildlife and forestry professionals during the GEIS in the early 1990s. This represented a considerable body of work that defined forest species-habitat relationships for 172 native, forest-dependent wildlife species. Species groups include birds (138, including roughed and spruce grouse), small/medium mammals (22), large mammals (4, including black bear, moose, white-tailed deer, and grey wolf), and herptofauna (8). While some species models have been refined, many of the original habitat requirements and relationships still represent the most relevant information available; however, wildlife research continues to refine habitat needs for certain species. Thus, previously modeled relationships will be sent to experts in ornithology, mammalogy, and herpetology at the University of Minnesota and Minnesota Department of Natural Resources for review and suggested revisions based on new research. Peer-reviewed comments and changes will be incorporated into the model and fully documented (e.g., the exact change, date of change, and source of suggested change). Previous species-habitat relationships will also be archived.

Outcome	Completion Date
1. Peer-review of species-habitat relationships (birds, mammals, and herptofauna)	March 2021
2. Incorporation of peer-review comments	June 2021



Activity 2: Develop and test an online application for the wildlife habitat model ENRTF BUDGET: \$ 152,041

An online interface will be developed to allow efficient use of the habitat model during environmental review and other applications. Website and user interface design will emphasize including intuitive features for ease of use by natural resource practitioners in the state. Users will have access to current habitat conditions at multiple scales (e.g., Public Land Survey System township, county, ecoregion, state) using the most up-to-date U.S. Forest Service, Forest Inventory and Analysis (FIA) database. In addition, users will be able to upload custom project or area specific data for evaluating habitat conditions or impacts from proposed management. Extensive support files will aid use of the interface and model. Outcomes include access to current and historical trends in wildlife habitat in their area of interest and rapid and cost effective completion of the habitat evaluation requirements during environmental review. The online application will undergo internal and external testing from county and MN DNR staff using their own forest inventory data. After thorough vetting, the website will open for general use, hosted by the Interagency Information Cooperative (IIC; gis.iic.umn.edu). Website analytics will be periodically reviewed to ensure relevancy and utility, and technical support will be provided as needed by IIC staff or affiliates.

Outcome	Completion Date
<i>1. Development of an online application of the wildlife habitat model</i>	<i>September 2021</i>
<i>2. Internal and external testing by stakeholders using several sources of forest inventory</i>	<i>December 2021</i>
<i>3. Update interface with testing results and launch stable release</i>	<i>March 2022</i>
<i>4. Track website use and provide scientific and technical support</i>	<i>Ongoing</i>

Activity 3: Conduct training webinars, workshops, and demonstrations ENRTF BUDGET: \$9,473

After successful launching of the vetted online application, all pertinent stakeholders will be contacted regarding trainings in the use of the online tool. Multiple online webinars and on-site workshops will be given to train practitioners on the use of the habitat model interface. During the trainings, users will be allowed to bring their own project data and will be guided through the process of evaluating their own habitat conditions or impacts. The model will also be demonstrated at in-state professional meetings, including the Minnesota Chapters of the Society of American Foresters and The Wildlife Society.

Outcome	Completion Date
<i>1. Contact stakeholders for scheduling trainings</i>	<i>October 2021</i>
<i>2. Conduct training webinars, workshops, and demonstrations</i>	<i>June 2022</i>

III. PROJECT PARTNERS AND COLLABORATORS:

Receiving funding: The project team includes Dr. John Zobel from the University of Minnesota (project lead). Not receiving funding: Dr. Chris Edgar from the Interagency Information Cooperative (Director), University of Minnesota, and U.S. Forest Service, Forest Inventory and Analysis; Mark Weber from St. Louis County (Land Commissioner); Dr. Alan Ek from the University of Minnesota; and Dr. Eli Sagor from the Sustainable Forests Education Cooperative (Program Manager), University of Minnesota.

IV. LONG-TERM IMPLEMENTATION AND FUNDING:

The online application will be hosted on University of Minnesota servers and displayed on the Interagency Information Cooperative (IIC; gis.iic.umn.edu) website in perpetuity. Website analytics will be periodically reviewed to ensure relevancy and utility, and technical support will be provided as needed by IIC staff or affiliates. The application will also be available for operations by the user community within their specific organizations. In addition, wildlife expertise will be periodically solicited to review specific species-habitat relationships to ensure they reflect current research. Any necessary updates (technical or scientific) going forward will be supported by internal IIC funds. Otherwise, no other long-term costs are envisioned.

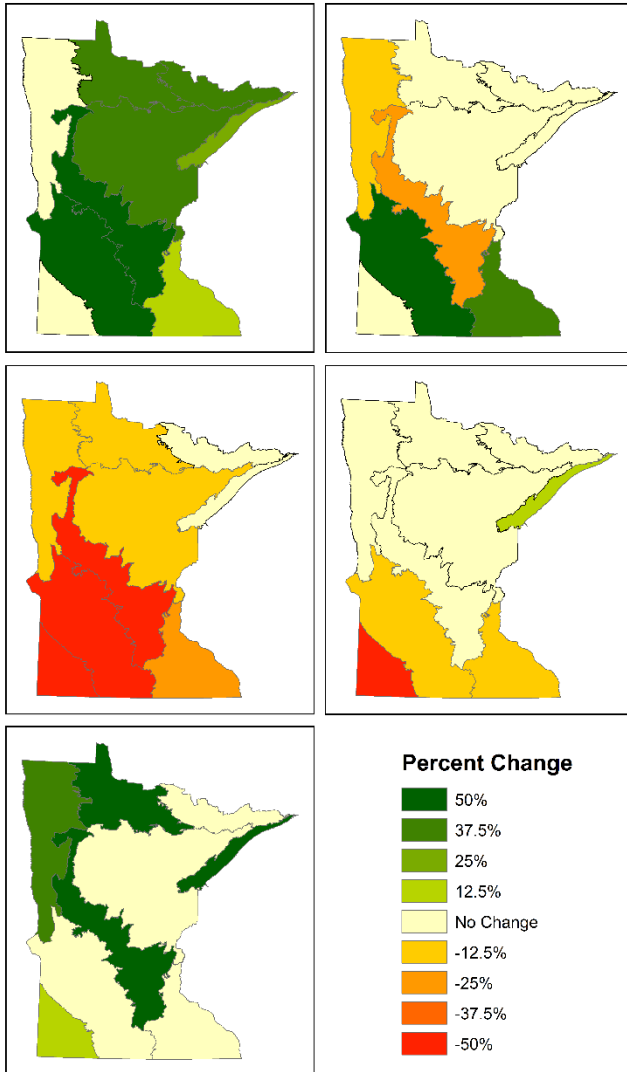
Attachment A: Project Budget Spreadsheet
 Environment and Natural Resources Trust Fund
 M.L. 2020 Budget Spreadsheet



Legal Citation:
 Project Manager: Dr. John Zobel
 Project Title: Rapid Assessment of Wildlife Habitat for Environmental Review
 Organization: University of Minnesota
 Project Budget: \$178,000
 Project Length and Completion Date: 2 years, June 30, 2022
 Today's Date: April 15, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
BUDGET ITEM				
Personnel (Wages and Benefits)		\$ 168,527	\$ -	\$ 168,527
J. Zobel, project manager: \$32,972 (74% salary, 26% benefits), 10% FTE for 2 years.				
Researcher 6 within the Department of Forest Resources, University of Minnesota: \$135,555 (74% salary, 26% benefits), 1.0 FTE for 2 years.				
Professional/Technical/Service Contracts				
		\$ -	\$ -	\$ -
Equipment/Tools/Supplies		\$ 700		\$ 700
Room rentals for workshops 500			\$ -	\$ -
Workshop supplies 200				
Capital Expenditures Over \$5,000				
		\$ -	\$ -	\$ -
Fee Title Acquisition				
		\$ -	\$ -	\$ -
Easement Acquisition				
		\$ -	\$ -	\$ -
Professional Services for Acquisition				
		\$ -	\$ -	\$ -
Printing				
Printing materials for workshops		\$ 1,140	\$ -	\$ 1,140
Travel expenses in Minnesota				
Travel to locations throughout Minnesota to conduct workshops on use of the online application. Destinations include field offices for the MN DNR, county seats, industry headquarters, and local meetings of forest and wildlife professionals (e.g., SAF, TWS). Likely locaitons include Aitkin, Bemidji, Cloquet, Duluth, Grand Rapids, Park Rapids, Rochester, Sandstone, and other outstate locations).		\$ 7,633	\$ -	\$ 7,633
Mileage: 3,585 miles at \$0.58/mi = \$2,079				
Lodging: 23 nights at an average of \$103/night = \$2,372				
Meals: 47 partial days and 3 full days at an aveage \$43.64/day = \$2,182				
Conference Registration: 3+ conferences = \$1,000				
Other				
		\$ -	\$ -	\$ -
COLUMN TOTAL		\$ 178,000	\$ -	\$ 178,000
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT				
	Status (secured or pending)	Budget	Spent	Balance
Non-State:		\$ -	\$ -	\$ -
State:		\$ -	\$ -	\$ -
In kind: Unrecovered indirect costs@ 54% of total direct cost		secured \$ 95,850	\$ -	\$ 95,850
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS				
	Amount legally obligated but not yet spent	Budget	Spent	Balance
		\$ -	\$ -	\$ -

Rapid Assessment of Wildlife Habitat for Environmental Review



Example species-specific model output for five species

How do proposed forest management practices affect habitat for 172 native, forest dependent wildlife species in Minnesota?



1 - Steve Wall, 2 & 5 - Derek Bakken, 3 - Rick Burtzel, 4 - Nick Chill
<http://creativecommons.org/licenses/by-nc/2.0/deed.e>



Project Manager Qualifications and Organization Description

Project Manager: John Zobel

Assistant Professor, Dept. of Forest Resources, University of Minnesota, St. Paul, MN 55108

Professional Appointments and Preparation

- Assistant Professor, Forest Resources, University of Minnesota, 2018 – present
- Assistant Professor, Forestry, Wildlife and Fisheries, University of Tennessee, 2014 – 2018
- Ph.D., Natural Resources Science and Management, University of Minnesota, 2013
- M.S., Statistics, University of Minnesota, 2015
- M.S., Natural Resources Science and Management, University of Minnesota, 2010
- B.S., Forest Resources, *summa cum laude*, University of Idaho, 2007

Areas of Expertise

Forest/natural resources biometrics, measurements, modeling, including general inventory and resource assessment. My research includes estimating carbon emissions due to forest disturbance, general growth and yield modeling, assessment of forest dependent wildlife habitat, and statistical support for projects involving black bear behavior, bat population trends due to white-nose syndrome, recovery of forest after emerald ash borer, and bird habitat relationships. This research and collaborations have led to several selected publications (below) or those under preparation:

- Granger, J. J., Zobel, J. M., and Buckley, D. 2017. Potential for regenerating major and minor ash species (*Fraxinus* spp.) following EAB infestation in the Eastern United States. *Forest Ecology and Management* 389:296-305.
- Zobel, J. M., Ek, A. R., and O'Hara, T. J. 2015. Quantifying the opportunity cost of extended rotation forestry with cohort yield metrics in Minnesota. *Forest Science* 61(6):1050-1057.
- Zobel, J. M., and Ek, A. R. 2014. The Wildlife Habitat Indicator for Native Genera and Species (WHINGS): Methodology and Application. Staff Paper Series No. 231. St. Paul, MN: University of Minnesota, Department of Forest Resources.
- Frelich, L. E., Ek, A. R., Zobel, J. M., and Page, K. 2013. Forest wildlife habitat description and data for Minnesota species. Staff Paper Series No. 219. St. Paul, MN: University of Minnesota, Department of Forest Resources.

Organization Description

For over 100 years, the Department of Forest Resources, University of Minnesota has been a leader in fundamental and applied research in natural resources within Minnesota, the Lake States, nationally, and internationally.