Environment and Natural Resources Trust Fund
2017 Request for Proposals (RFP)

Project Title: **ENRTF ID: 084-C**

Bridging Classroom and Outdoor Learning by Studying Birds

Category: C. Environmental Education

Total Project Budget: $ 270,740

Proposed Project Time Period for the Funding Requested: 2 years, July 2017 – June 2019

Summary:

We integrate two established educational tools, Raptor Lab and Driven to Discover/Birds, blending classroom learning with outdoor science, to empower teachers to create outdoor learning environments that foster exploration.

Name: Julia Ponder

Sponsoring Organization: U of MN

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Location

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

Bridging formal and informal learning to advance environmental stewardship

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

I. PROJECT STATEMENT

To empower teachers with the tools they need to implement outdoor environmental learning projects, The Raptor Center (TRC) will leverage its world-renowned expertize in environmental science education by blending its existing web-based Raptor Lab platform with curriculum designed by the University of Minnesota's Driven to Discover program. Development of TRC's Raptor Lab was funded by the Minnesota Environment and Natural Resources Trust Fund in 2014. If Minnesota students are to grow into adults who are capable of making meaningful contributions to conservation, both they and their teachers need effective tools to guide outdoor environmental learning projects. This project will give both teachers and students those much-needed tools.

We will leverage the Raptor Lab online platform for the "Bridging Classroom and Outdoor Learning by Studying Birds" project by:

- Creating a new learning module that integrates established paper-based curriculum, *Driven to Discover Facilitator's Guide to Citizen Science/Birds,* into online lessons for the Raptor Lab platform. The existing Raptor Lab platform, which already offers a visually engaging and interactive online environment, will allow students to share their findings of the science-based "mini-investigations" they conduct outdoors on birds as described in the Driven to Discover curriculum.
- Expanding Raptor Lab to include a Teacher Management system will allow educators to track student progress and evaluate student work.
- Expanding Raptor Lab's existing Teacher Toolbox will support effective implementation of the online version of the Driven to Discover curriculum.

Developed by the University of Minnesota Extension Services and funded by the National Science Foundation, *Driven to Discover Facilitator's Guide to Citizen Science/Birds* is a proven curriculum aimed at fifth through tenth grade students. Integrating this curriculum into the Raptor Lab platform will allow these outdoor student scientists to upload images, sounds, videos, GPS points, and observation notes of the birds they observe in the wild directly into their online environmental science projects.

The expanded Teacher Management system will allow teachers to track student progress and evaluate student work as it empowers them to bring their classrooms outdoors in an effort to create in their students a knowledge of environmental issues facing birds, inspire these young minds to become more conservation oriented and even consider careers in the environmental sciences. Like everyone else, teachers are busy and will benefit from easy to use tools. To address this, we will design, develop, and offer demonstrations throughout the state to achieve maximum adoption by Minnesota schools.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Expand Raptor Lab Online Platform **Budget: $99,615**

We will design, develop, and build an innovative new Outdoor Birding Module based on the Driven to Discover curriculum to be used by 600 teachers and 15,000 fifth through tenth grade students statewide. We will also design, develop, and build a teacher management system that will allow educators to effectively assess student learning, increasing the functionality of the curriculum. We will add ArcGIS capability to the Raptor Lab environment to provide enhanced data analysis tools for students and expand the Teacher Toolbox to include added resources, updated activities, adapted curriculum, new assessment tools, and benchmarks linking the curriculum to state standards. We will also create two outdoor conservation projects that clearly demonstrate to both teachers and students how to conduct an outdoor conservation project.

Outcome	Completion Date
1. Add a new Outdoor Birding online module to the existing Raptor Lab platform by adapting the existing paper-based Driven to Discover curriculum	12-31-2017
2. Add a Teacher Management System to the existing Raptor Lab platform	12-31-2017
3. Integrate ArcGIS capability into the existing Raptor Lab platform	6-1-2018
4. Expand the existing Raptor Lab Teacher Toolbox to accommodate the Driven to Discover curriculum	6-1- 2018
5. Create two online outdoor conservation projects	6-1- 2018

Activity 2: Obtaining Maximum Adoption **Budget: $171,124**

We will partner with regional experts in environmental educational to act as coordinators and presenters of school demonstrations to maximize the number of schools throughout the state that implement our outdoor learning tools at the lowest cost possible to us. Wolf Ridge Environmental Learning Center will coordinate demonstrations in northern Minnesota, Eagle Bluff Environmental Learning Center in southern Minnesota, and TRC throughout the metro area. These demonstrations will be presented at 60 schools, with teachers reaching more than 15,000 fifth through tenth grade students. In addition, we will provide two follow-up teleconference meetings to offer continued support and answer questions to obtain maximum adoption.

Outcome	Completion Date
1. Develop supporting materials	6-1-2018
2. Design and develop demonstrations	6-1-2018
3. Through partnerships with regional experts present 60 demonstrations	6-30-2019
4. Facilitate 120 follow-up teleconference meetings with schools to obtain maximum buy-in	6-30-2019
5. Reach more than 15,000 students with the Outdoor Birding module	6-30-2019

III. PROJECT STRATEGY

A. Project Team/Partners

- Julia Ponder, executive director of TRC, will provide oversight of the grant, reporting, and timely completion of all deliverables.
- Aaron Doering, University of Minnesota Learning Technologies Media Lab, will provide overall design and development of all components of the online learning environment.
- Andrea Strauss, University of Minnesota Extension Citizen Science Program, will adapt the curriculum for the online format and design demonstration materials.
- Wolf Ridge Environmental Learning Center and Eagle Bluff Environmental Learning Center will consult on program development and coordinate and implement out-state demonstrations.

B. Project Impact and Long-Term Strategy

Once developed, this online outdoor environmental learning program will be available to teachers across the state and could potentially reach hundreds of thousands of Minnesota students, creating in them a curiosity about birds and nature, a desire to protect the environment, and even encourage students to consider careers in the environmental sciences. Outdoor-learning modules based in the environmental sciences will be added as funds allow.

C. Timeline Requirements

This project will be carried out over two years, with expansion of the existing Raptor Lab online environment completed in the first year and the school demonstrations completed in the second year.

2017 Detailed Project Budget

Project Title: Bridging classroom and outdoor learning

IV. TOTAL ENRTF REQUEST BUDGET 2 years

BUDGET ITEM	AMOUNT
Personnel: Dr. Julia Ponder, Principal Investigator -Responsible for oversight of the grant, sponsor reporting, scientific review, and the timely and successful completion of proposed outputs and outcomes; 3% academic year effort Y1 and Y2 (68% salary, 32% fringe)	$ 9,753
Personnel: Michael Billington, Project manager - day-to-day logistics, adaption of content into online format, teacher assessment question development, interdepartmental communications, team planning, payroll reporting, and contractor invoicing management, 50% calendar year effort Y1 and Y2 (77% salary, 23% fringe)	$ 49,761
Personnel: Jeni Hendrickson, Online Designer - Responsible for the design and development of the online learning environment redesign, teacher management system, integration of ArcGIS, expanded teacher toolbox, and digital teacher assessment tool. 25% for 3 semesters (68% salary, 32% fringe)	$ 22,869
Personnel: Bernard Ferguson Computer Programmer -Responsible for building the redesign of the online learning environment, teacher management system, integration of ArcGIS, and expanded teacher toolbox, 40% effort for 3 semesters (77% salary, 23% fringe)	$ 38,342
Personnel: Workshop Coordinator (To be hired) - Responsible for managing 11 instructors (2 lead instructors and 8 instructors), overseeing workshop scheduling and presentation development, scheduling 20 workshops, presenting 10 workshops, facilitating 10 follow-up cohort tele-meetings, reimbursement for invoicing, and budget.	$ 38,220
Personnel: Andrea Strauss, Citizen Science Consultant - Responsible for curriculum content adaption into online format and workshop development and design. 8% effort for 1 yr	$ 6,295
Professional/Technical/Service Contracts: Two regional coordinators (Wolf Ridge Environmental Learning Center and Eagle Bluff Environmental Learning Center) will be contracted for 2 years at $ 40,000 to provide 20 teacher workshops each year.	$ 80,000
Professional/Technical/Service Contracts: Three instructors will be contracted to present 10 workshops and facilitate 10 follw-up cohort tele-meetings in the metro area	$ 13,500
Professional/Technical/Service Contracts: Assessment Consultant - Responsible for consulting on project assessment design and implementation for teacher evaluation of the online platform and project curriculum (Position TBD)	$ 5,000
Equipment/Tools/Supplies: Curriculum guides for all teachers who complete workshops @ 10 each:	$ 6,000
Travel: A Strauss (Citizen Science/UMN Extension advisor) to travel 6 trips from Rochester to St. Paul for design meetings and teacher workshops ($100/trip) and one to northeast MN ($400)	$ 1,000
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 270,740

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
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: 1% Aaron Doering effort - 2 years.	$ 3,922	*Secured*
Funding History: Raptor Lab development (2014 ENRTF)	$ 186,000	
Remaining $ From Current ENRTF Appropriation: *2014 Raptor Lab*	$ 41,910	*Legally obligated ($29,936) and Unspent ($11,974)*

Bridging Classroom and Outdoor Learning By Studying Birds

Expanding the Raptor Lab with proven outdoor curriculum to empower teachers…

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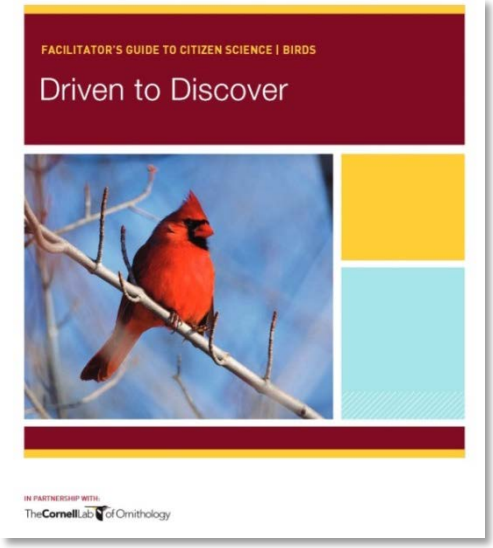

…to implement outdoor environmental learning projects using birds and technology…

...to inspire students to be the next generation of conservationists in Minnesota.

Project Manager Qualifications and Organizational Description

Dr. Julia Ponder, Principal Investigator. Dr. Ponder is the Executive Director for The Raptor Center and College of Veterinary Medicine faculty member. Dr. Ponder is a veterinary expert in raptor health working in a clinical and research environment devoted to raptors. She has extensive project management experience, as well as international experience working with NGOs and governmental agencies. She has managed over a million dollars' worth of grants, including two previous ones from LCCMR (Raptor Lab: Integrating Online and Outdoor Learning and Wildlife Disease Data Surveillance and Analysis). Dr. Ponder will be responsible for sponsor reporting, scientific oversight of all curriculum content and timely and successful completion of TRC proposed outputs and outcomes.

Dr. Aaron Doering, Co-Principal Investigator. Dr. Doering is an Associate Professor in Learning Technologies at the University of Minnesota and Co-Director of the LT Media Lab. Dr. Doering currently holds the Bonnie Westby-Huebner Endowed Chair in Education and Technology, is a Laureate of the prestigious humanitarian Tech Awards, and has delivered education on sustainability and climate change to over 10 million students by dogsledding and pulking over 5,000 miles throughout the circumpolar Arctic since 2004. His most current project, *Earthducation*, investigates the intersection of education and sustainability on all seven continents over the next four years. Dr. Doering will be responsible for overall integration and evaluation of *The Raptor Lab* within our partner schools, as well as the design of all implementation plans for the online learning environment.

The LT Media Lab (LTML) is a research and design at the University of Minnesota with a focus on innovation in design for online learning and integration of educational technology in K-20+ environments. The Center's mission is to inspire global engagement and collaboration in applying technology to humanity's most pressing educational, social, and environmental issues by designing, developing, evaluating, and disseminating innovative technology-mediated solutions for K-20+ learners, educators, researchers, and policy-makers from around the world.

The Raptor Center (TRC) is a University research and outreach center focused on health issues found at the intersection of raptors and humans. In addition to providing medical care of over 700 injured and ill raptors each year, TRC's Education department averages over 1,000 programs reaching more than 150,000 people throughout Minnesota, Wisconsin, and Iowa annually. Its education specialists utilize live animal programming in formal and informal classroom settings to present captivating and engaging educational programs designed to promote environmental stewardship, engage students in STEM activities and encourage outdoor learning