

**Environment and Natural Resources Trust Fund
2011-2012 Request for Proposals (RFP)**

Subd: 08e

Project Title: Eagles Linking Students to Science and Nature

Category: G. Environmental Education

Total Project Budget: \$ 170,000

Proposed Project Time Period for the Funding Requested: 2 yrs, July 2011 - June 2013

Other Non-State Funds (secured): \$ 8,000

Summary:

Engages students in exploring science and nature through curriculum built on real-life case studies of raptors treated at The Raptor Center and eagles tracked for post-release monitoring.

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Location:

Region: Statewide

Ecological Section: Statewide

County Name: Statewide

City / Township:

2011-2012 MAIN PROPOSAL

PROJECT TITLE: Following Eagles to Link Students and Nature

I. PROJECT STATEMENT

Many recent studies have underscored the increasing detachment of society from the natural world and the pressing need for effective environmental education. For over 30 years, The Raptor Center at the University of Minnesota (TRC) has been using live animal programming as a unique and compelling educational tool for delivering important messages about conservation, ecosystem interconnectedness, and the big picture of environmental sustainability. TRC averages over 1,000 programs each year (47% on-site and 52% off-site) reaching 200,000 people. In 2009, we developed a Spanish language outreach program. We recognize that effective environmental education requires more than just a presentation of information. In order to achieve environmental literacy, effective programs must:

- Engage learners in a way that is relevant to them
- Empower learners with skills to address issues
- Involve students through interactive learning processes
- Instill a sense of stewardship in learners
- Present scientifically sound and relevant information
- Undergo evaluation with appropriate tools and be adjusted accordingly

Using the stories from our raptor hospital and our role as a scientific research institution, The Raptor Center will expand our ability to provide effective outreach; enhance our live raptor presentations to allow more in-depth experiences; and provide additional opportunities for learners who are unable to access our current programming. For example, the story of bald eagles is one of a population decimated by human environmental impact and restored by invaluable human efforts. While their populations today are increasing, they still face many environmental threats. As an indicator species for ecosystem health, eagles present an inspiring foundation for learning. Through stories like these, this project will expand environmental education offerings available to Minnesota students and raise awareness of the critical challenges faced at the intersection of humans, wild animals and the environment.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: *Raptor Exploration! Learning Units* **Budget:** \$ 111,523

Five “Raptor Exploration!” lesson units with on-line activities and classroom resources will be designed. These modules will engage learners in real-life case stories of injured raptors treated at The Raptor Center’s hospital and then equipped with satellite telemetry to monitor their movements once released back into the wild. Multimedia technology will allow students to virtually experience the treatment and rehabilitation of injured raptors. Prior to release, three raptors will be backpacked with satellite transmitters for post-release monitoring. This satellite telemetry project will provide real and engaging scientific data for use in lesson plans and activities designed to build environmental literacy through engaging students in compelling stories. As students explore these modules, they will learn about raptor biology, conservation, human/wildlife conflict, wildlife monitoring and citizen science. Topics covered will be age appropriate and may include:

- Geography: map/legend reading, evaluating habitat
- Meteorology: precipitation, winds, weather, thermals
- Technology: use of GPS, computers, solar power
- Scientific research: analyzing data
- Natural history: habitat, migration and seasonal movements
- Ethical issues: wildlife monitoring (banding, tracking)
- Human-wildlife interface: impacts of human activity on wildlife

These exploration modules and activities will be available in an on-line classroom on The Raptor Center's web site (last year: 93,746 visits from 74,558 visitors); in addition, their availability will be marketed through The Raptor Center's teacher listserv (1,393) and to students through social media.

Outcome	Completion Date
<i>1. Raptor Exploration! on-line classroom</i>	<i>March 2012</i>
<i>2. Satellite telemetry and data collection established on three eagles</i>	<i>Jan 2013</i>
<i>3. Five multimedia on-line exploration modules</i>	<i>June 2012</i>
<i>4. Age appropriate activity guides</i>	<i>Dec 2012</i>

Activity 2: *Expanded program delivery*

Budget: \$ 58,477

An expanded environmental education program will be developed to enhance learning through the use of technology. Building on the modules being developed for on-line use, real science projects will be brought into programming, combining research and educational entertainment to engage learners. Using data from the satellite telemetry project as well as citizen science projects such as Kestrel Watch (TRC) and the Breeding Bird Atlas, the following program enhancements will be developed:

- Classroom tools: pre and post-program activities, teaching trunks containing biofacts and other hands-on materials to deepen and enhance experiential learning
- Multimedia presentation for use with live bird programming (on-site and off-site)
- An interactive display to enhance on-site programming and self-guided study

These new tools will be incorporated into The Raptor Center's programming which reaches an average of 200,000 people each year: 30% of the off-site programming is outside the metro area, reaching 70,000 people. A critical, and often lacking, component of environmental education is evaluation of program effectiveness. Working with the Center for Teaching and Learning, new program evaluation tools will be developed, tested and used to inform changes in programming; during this pilot phase, 2000 students will receive classroom presentations and assessments.

Outcome	Completion Date
<i>1. Classroom tools (teaching trunks and activity packets)</i>	<i>August 2012</i>
<i>2. Multimedia presentation</i>	<i>August 2012</i>
<i>3. Interactive on-site display</i>	<i>Sept 2012</i>
<i>4. Pilot program delivery (20) and assessment</i>	<i>June 2013</i>

III. PROJECT STRATEGY

A. Project Team/Partners

In-kind partners for this project will include: Audubon Minnesota and National Eagle Center (satellite telemetry program and curriculum development), University of Minnesota Center for Teaching and Learning (program evaluation tools and assessment), and Minnesota teachers and naturalists (curriculum development and refinement). Schools for pilot programming have not yet been identified.

B. Timeline Requirements

This project will be carried out over 24 months.

C. Long-Term Strategy/Future Funding Needs

Once developed, this program will be self-supported through earned income with donor-support providing access for under-served students. The satellite telemetry project will continue for a minimum of three years and new data will continue to be incorporated into program.

2011-2012 Detailed Project Budget
Through The Eyes of Eagles: Environmental Education

IV. TOTAL TRUST FUND REQUEST BUDGET: Two years

BUDGET ITEM	AMOUNT
Personnel: Project Coordinator .75 FTE (project oversight, curriculum development, filming, social media site management, satellite project data collection and analysis, partnerships). Two years, salary 72%, Benefits 28%	\$ 92,475
Personnel: Student worker (filming, video-editing, story documentation). 1000 hours first year, Salary 92%, Benefits 8%	\$ 11,255
Personnel: Naturalist .25 FTE (curriculum development/content, web site content, pilot program delivery). Two years, salary 72%, Benefits 28%	\$ 21,920
Contracts: Multimedia design and content production - assimilation of creative content into multimedia presentation for on-site and off-site usage	\$ 9,000
Contracts: Satellite monitoring (three eagles, \$1000/year for 2 years)	\$ 6,000
Contracts: IT/web support - development of web site structure for public access of on-line classroom which allows guests to view lesson units, access citizen science and satellite telemetry projects, and connect to social media	\$ 7,000
Equipment/Tools/Supplies: Three "Eagle Trunks" and supplies (\$1,000 each)	\$ 3,000
Equipment/Tools/Supplies: Satellite transmitters (3@\$3650)	\$ 10,950
Equipment/Tools/Supplies: Kiosk display for on-site self-study and interactive learning - complementary to live programming component	\$ 7,500
Acquisition (Fee Title or Permanent Easements):	\$ -
Travel: Travel expenses incurred during filming for habitat components and program delivery	\$ 900
Additional Budget Items:	\$ -
TOTAL ENVIRONMENT & NATURAL RESOURCES TRUST FUND \$ REQUEST	\$ 170,000

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ Being Applied to Project During Project Period: Update of audiovisual equipment (\$8000 donor funding - LCD projectors, computers, flat screen displays)	\$ 8,000	<i>Secured</i>
Other State \$ Being Applied to Project During Project Period	\$ -	<i>Indicate: Secured or Pending</i>
In-kind Services During Project Period:		
Remaining \$ from Current ENRTF Appropriation (if applicable)	\$ -	<i>Indicate: Unspent? Not Legally Obligated? Other?</i>
Funding History: <i>Indicate funding secured prior to July 1, 2011 for activities directly relevant to this specific funding request. State specific source(s) of funds.</i>	\$ -	

Julia Ponder, DVM – Executive Director for The Raptor Center and College of Veterinary Medicine faculty member is the PI for this project for University of Minnesota submission protocol, she is listed as the project manager and will be the primary contact for the proposal.

Gail Buhl - Education Program Manager for The Raptor Center, will be the key personnel for this project. She brings extensive environmental education experience: Gail has a B.S. in Biology from the University of Minnesota. She has been working with and training a variety of animal species, but predominantly raptors since 1989. She has varied experience in writing, training, and presenting programs of all types. Gail has fully managed three very different programs at the Carpenter St. Croix Valley Nature Center in Hastings, Minnesota; the Minnesota Zoo World of Birds Show and Wolf Ridge Environmental Learning Center in Finland, Minnesota. At all three facilities she trained and managed volunteers, interns and staff on a daily basis. For these institutions she wrote Environmental Education curriculum for presentation to all ages especially in the area connecting people and birds. She has modified and created several supplemental activities to supplement ongoing curricula at The Raptor Center to increase student participation and learning of certain concepts. As an aside, she co-edited and authored the book, Wildlife in Education: A Guide for the Care and Use of Program Animals. Published in 2004 by the National Wildlife Rehabilitators Association (NWRA). And she has been an instructor for the Care and Management of Captive Raptors Workshops held at The Raptor Center since September 2005 to the present.

Established in 1974, **The Raptor Center at the University of Minnesota** is a world renowned leader in raptor medicine and surgery. The Center has a threefold mission: to promote the health of the ecosystem through the study of emerging issues; to train future leaders in avian medicine and ecosystem health; and to increase stewardship of the environment through public engagement. Key accomplishments of the organization include pioneering avian orthopedic techniques and critical care, re-introduction of the peregrine falcon into the Midwest United States along with work on other endangered species such as the bald eagle and the California condor, treatment of over 17,000 raptors since 1974 and an outreach program that reaches 200,000 people each year. Additionally, over 300 veterinarians and veterinary students from over 27 different countries have come to study at The Raptor Center. The Center's staff is well represented in the scientific literature on raptor medicine and care, and has published numerous books and chapters in these areas. Current areas of focus are the study of raptors as sentinels for emerging issues in ecosystem health, the development of an infrastructure for using data from wildlife hospitals for health monitoring of wild animal populations, clinical studies of new treatment protocols, expanded training capacity for veterinarians and the use of technology to enhance outreach methods to increase stewardship of the environment. As part of the University of Minnesota's College of Veterinary Medicine, the Center brings strong partnerships and collaborations to the work it does. Although part of the university, The Raptor Center is a non-profit organization whose work is supported by community philanthropy and augmented by the efforts of over 300 volunteers

