Environment and Natural Resources Trust Fund
2019 Request for Proposals (RFP)

Project Title: **ENRTF ID: 013-A**

Conserving Minnesotas Nine Species of Freshwater Turtles

Category: A. Foundational Natural Resource Data and Information

Sub-Category:

Total Project Budget: $ 333,000

Proposed Project Time Period for the Funding Requested: June 30, 2022 (3 yrs)

Summary:

The Minnesota Zoo will improve the long-term viability of Minnesotas imperiled turtle populations by researching threats, implementing mechanisms to reduce mortality, and creating educational materials for use throughout the state.

Name: Seth Stapleton

Sponsoring Organization: Minnesota Zoo

Title:

Department: Conservation

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Location

Region: Central, Metro, Southeast

County Name: Anoka, Carver, Chisago, Dakota, Dodge, Goodhue, Hennepin, Isanti, Le Sueur, Olmsted, Ramsey, Rice, Scott, Sherburne, Sibley, Steele, Wabasha, Waseca, Washington, Winona, Wright

City / Township:

Alternate Text for Visual:

This graphic highlights the project goals of improving turtle conservation and includes photos that illustrate the core project activities: mitigating mortality on roadways, reducing nest predation, and promoting public awareness.

_____ Funding Priorities _____ Multiple Benefits _____ Outcomes _____ Knowledge Base

_____ Extent of Impact _____ Innovation _____ Scientific/Tech Basis _____ Urgency

_____ Capacity Readiness _____ Leverage _____ TOTAL _____%

____ If under $200,000, waive presentation?

PROJECT TITLE: Conserving Minnesota's Nine Species of Freshwater Turtles

I. PROJECT STATEMENT

With its vast network of lakes and waterways, Minnesota is home to an abundance of aquatic and semi-aquatic wildlife, including nine species of freshwater turtles. Turtles are a key component of diverse, healthy, and resilient aquatic ecosystems, often functioning as indicator species that reflect broader environmental conditions. Turtles also inspire connections to nature for children and adults alike.

Turtles, however, face numerous threats during different life stages, ranging from very high predation of incubating nests to mortality of juveniles and adults on Minnesota's roadways. As a result of such threats, two species – the Blanding's turtle and the wood turtle – are now listed as threatened in the State.

The Minnesota Zoo proposes to improve the prospects for the long-term viability of turtle populations by quantifying two of the primary threats to these species and implementing mechanisms to mitigate these threats. We will expand our current partnership with Minnesota Department of Transportation (MnDOT) and Department of Natural Resources (DNR) to: 1) collect foundational data on threats faced by Blanding's and wood turtles; 2) reduce mortality of imperiled turtles; and 3) promote public awareness and individual actions to benefit healthy and biodiverse aquatic systems.

The specific outcomes for this project are:

- Characterizing the threats that Minnesota's turtles face.
- Implementing and evaluating at least 3 mechanisms to reduce mortality of imperiled turtles.
- Disseminating information about turtle conservation to >1 million annual visitors at the Zoo and beyond.

This project also meets an objective of the DNR's 2015 – 2025 Wildlife Action Plan, which calls for collecting data to update the status of wood turtles in Minnesota and inform the state's wood turtle conservation plan.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Reducing mortality of turtles on Minnesota's roadways

Turtle mortality on Minnesota's roadways is a significant challenge, particularly during the spring and late summer as turtles move among feeding grounds, reproductive sites, and overwintering areas. The Zoo, in close partnership with MnDOT and DNR, will conduct research to better quantify this threat and implement measures to mitigate turtle mortality on our roads. The Zoo will collect foundational data to document turtle use of and mortality along segments of roadways both in the greater metropolitan area and in southeastern Minnesota that are known or believed to be primary movement corridors. These efforts will begin at a limited scale prior to the granting period (i.e., 2017 – 2018). We will then implement and monitor various mechanisms to mitigate turtle mortality such as dynamic traffic signs, road paint and temporary speed reduction zones. We will also develop training materials for use by citizen scientists to broaden our reach and increase monitoring capacity. To achieve these desired outcomes, the Zoo must dedicate a staff person to conduct field surveys and analyses.

ENRTF BUDGET: $ 149,500

Outcome	Completion Date
1. Road surveys conducted to collect baseline movement and mortality data.	October, 2019
2. Mechanisms to reduce mortality on roads installed.	April, 2020
3. Efficacy of potential mitigation measures evaluated via post-implementation surveys.	October, 2021

Activity 2: Improving hatching success of riverine turtles

Loss of incubating eggs and hatchlings remaining in nests to predators such as raccoons is a significant issue for Minnesota's turtles. For imperiled species such as the wood turtle, nest predation poses a major threat to long-term population viability, particularly in areas with higher human populations and recreational activity: the presence of people often brings mammalian predators if visitors leave trash and other belongings behind. To

improve hatching success, the Zoo and the DNR will outfit endangered wood turtles with GPS transmitters, enabling us to identify key nesting sites. As an ancillary benefit, transmitters will enable us to document habitat use of wood turtles to inform effective conservation strategies. We will then install electrified fences at selected nesting sites that will allow turtle access but exclude mid-sized mammalian predators. Cameras will also be installed at each site to document visitation rates by turtles and predators. This work will begin in 2017 – 2018 in the Cannon, Straight and Zumbro River watersheds and, with ENRTF support, will be expanded to additional watersheds in central and southern Minnesota. Nesting site monitoring will continue through spring 2022.

ENRTF BUDGET: $ 169,000

Outcome	Completion Date
1. Wood turtles outfitted with transmitters to collect nesting site and movement data.	October, 2020
2. Predator exclusion fencing constructed at select nesting sites.	April, 2021
3. Sites monitored post-installation to assess effectiveness in reducing mortality.	May, 2022

Activity 3: Building public awareness at the Zoo and beyond

The Zoo will leverage its ~1.3 million annual visitors and its expertise in education and outreach programming to raise public awareness about turtle conservation. The Zoo's well-regarded Zoomobile program, which features Blanding's and wood turtles, gives citizens from around the state the opportunity to experience wildlife up-close in their own communities. Using the Zoomobile as a platform to share key conservation message, we will develop outreach materials centered on Minnesota's turtles can be shared and left behind after any Zoomobile program that incorporates turtles. On site at the Zoo, we will develop and install interpretive graphics and produce a short (3 – 5 minute) video to convey these same conservation messages to Zoo visitors.

ENRTF BUDGET: $ 14,500

Outcome	Completion Date
1. Outreach materials developed.	June, 2020
2. Interpretive graphics and video outlining the biology and conservation of freshwater turtles developed and installed.	June, 2020
3. Outreach materials disseminated via Zoomobile and other programs.	June, 2022

III. PROJECT PARTNERS:

A. Partners receiving ENRTF funding

The Minnesota Zoo is the sole recipient of ENRTF funding.

B. Partners NOT receiving ENRTF funding

Name	Title	Affiliation	Role
Chris Smith	Wildlife Ecologist, Protected Species Coordinator	MnDOT	Technical expertise, field research / support
Carol Hall	Herpetologist	DNR	Technical expertise, field research / support

IV. LONG-TERM- IMPLEMENTATION AND FUNDING: This project will improve the conservation of Minnesota's imperiled turtles by mitigating two sources of mortality and promoting public awareness and actions Minnesotans can take to improve the conservation of our aquatic resources. This is particularly important at present, as both Blanding's and wood turtles will be undergoing status reviews by the US Fish and Wildlife Service to determine whether they should be proposed for listing under the federal Endangered Species Act (ESA). Working proactively to improve the health of local turtle populations may avoid the regulatory burden and potential economic impacts associated with a possible listing under the ESA. Aspects of our work, such as reducing road mortality, will also benefit other wildlife, including reptiles and amphibians.

V. TIME LINE REQUIREMENTS: Project outcomes will be achieved within three years, as outlined above. Publication of research results will likely extend beyond the grant period.

2019 Proposal Budget Spreadsheet

Project Title: Conserving Minnesota's Nine Species of Freshwater Turtles

IV. TOTAL ENRTF REQUEST BUDGET 3 years

BUDGET ITEM (See "Guidance on Allowable Expenses")	**AMOUNT**
Personnel:	
Field Conservation Supervisor and Principal Investigator / Project Manager. (1 person, 72% salary / 28% benefits), 0.10 FTE for 3 years	$ 33,000
Natural Resources Specialist Senior - Wildlife Research. (1 person, ~65% salary / 35% benefits). Average 0.90 FTE for 3 years	$ 233,000
Professional/Technical/Service Contracts:	
Videographer contract to develop a short (3 - 5 min) video about Minnesota's turtles.	$ 5,000
Equipment/Tools/Supplies:	
Road mortality mitigation measures, including traffic signs, lights, and road paint	$ 15,000
GPS transmitters to track movements of wood turtles (~$1,400 / unit; 10 units total for 2019 and 2020)	$ 14,000
Predator exclusion fencing and monitoring equipment (est. at $5,000 / unit, including hardware, fencing, batteries, and cameras; 4 units plus small contingency for additional supplies)	$ 20,500
Travel:	
Fuel / mileage and meals to travel to field sites in southern and central Minnesota: $1,000 / yr for 3 years. Reimbursement rates as allotted per the State of Minnesota travel regulations.	$ 3,000
Additional Budget Items:	
Printing of outreach materials, potentially including educational workbooks and / or booklets, that raise awareness and promote the conservation of turtles.	$ 7,500
Zoo-based turtle conservation educational and outreach, including photo licensing and interpretive signage and displays	$ 2,000
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 333,000

V. OTHER FUNDS *(This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)*

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:		
The Zoo's general operating fund will provide additional support to the project, including utilities and administrative costs (15% of project budget)	$ 49,950	Pending
MnDOT Grant: Reduce vehicle-animal collisions with installation of small animal exclusion fencing	$ 34,581	Secured
In-kind Services To Be Applied To Project During Project Period:		
DNR: MBS and Nongame staff will capture turtles to be outfitted with transmitters and provide technical advice regarding selection of turtle nest sites for installation of predator exclusion fences, and road selection for mechanisms to reduce mortality in rare turtle populations.	$ 8,000	Pending
Past and Current ENRTF Appropriation: N/A	$ -	
Other Funding History:		
Legacy Fund appropriation to Minnesota Zoo, FY17 activities	$ 6,000	Secured
Legacy Fund appropriation to Minnesota Zoo, FY18 activities	$ 20,000	Secured
Legacy Fund appropriation to Minnesota Zoo, FY19 activities	$ 65,500	Pending
MnDOT Grant: Reduce vehicle-animal collisions with installation of small animal exclusion fencing, FY18 - FY19 activities	$ 115,419	Secured
Minnesota Zoo Foundation, FY17 activities	$ 7,000	Secured
Minnesota Zoo Foundation, FY18 activities	$ 5,500	Secured

Conserving Minnesota's Turtles through Research and Education

The Minnesota Zoo, in partnership with MnDOT and DNR, will use road signs and other strategies to mitigate turtle mortality on our roadways.

Zoo staff will raise public awareness and promote actions that can benefit turtle populations.

To reduce nest predation, Zoo staff will work with DNR to fence key nesting sites and improve hatch success.

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GOAL

REDUCE MORTALITY AND PROMOTE AWARENESS TO CONSERVE MINNESOTA'S TURTLES

DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF NATURAL RESOURCES

MINNESOTA ZOO

PROJECT MANAGER QUALIFICATIONS

Dr. Seth Stapleton, Minnesota Zoo's Field Conservation Supervisor, will serve as project manager for the proposed work. He has built a diverse professional profile in wildlife research and conservation over the past 18 years, as his work has spanned a variety of species and geographic regions. Stapleton has particular expertise with imperiled turtles: he has conducted research on the critically endangered hawksbill sea turtle since 2004, and he has served as the principal investigator and director of a monitoring program in the eastern Caribbean since 2009. In the past year, he has led the Zoo's efforts to study and promote the conservation of Minnesota's turtles and has developed new partnerships with MnDOT and DNR. Stapleton has a proven track-record of fund-raising and managing large budgets, obtaining more than $2.5 million to support his research, and he has been successful in initiating and expanding collaborative studies among government agencies, NGOs, academic institutions and community groups.

For the proposed project, Stapleton will oversee project planning and implementation, coordinate efforts with project partners (including MnDOT and DNR), provide scientific guidance for the research elements of this work, supervise Zoo staff implementing the monitoring and conservation program in the field, manage budgets, and prepare reports and resultant peer-reviewed publications.

ORGANIZATION DESCRIPTION: Minnesota Zoological Garden

The Minnesota Zoo is a unique state agency. Established in 1978 to provide Minnesota residents and guests with an opportunity to experience animals from the exotic to the familiar in natural habitats, today the Zoo is one of the State's premier cultural, educational and conservation institutions.

The Minnesota Zoo's mission is ***to connect people, animals and the natural world to save wildlife.*** With 1.3 million guests a year, over 2.7 million website hits annually and state-wide outreach programs reaching thousands more, the Zoo is in an excellent position to strengthen Minnesotans' awareness and understanding of our State's commitment to wildlife, science and conservation. The Zoo is the State's largest environmental educator with more than 500,000 participants in Zoo education programs.

The Minnesota Zoo is also a leader in conservation – directing efforts and partnering with others on a variety of conservation programs at the Zoo, in Minnesota and across the globe. Over the past six years, the Zoo has enhanced its efforts to focus on Minnesota wildlife and habitats, including projects to conserve Minnesota's native moose, bison, mussels, turtles, and prairie butterflies. Advancing the science of wildlife conservation is an important part of the Zoo's work, as evidenced by the Zoo's research on wildlife behavior, ecology, genetics, disease, and conservation techniques.

The Zoo has a proven record of using its resources efficiently and effectively, ***matching*** the State's investment with private funds and earned income.