

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

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**Project Title:**

**ENRTF ID: 011-A**

Conserving Minnesota's Turtles through Research and Education

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**Category:** A. Foundational Natural Resource Data and Information

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**Total Project Budget:** \$ 364,000

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

**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.

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**Name:** Seth Stapleton

**Sponsoring Organization:** Minnesota Zoological Garden

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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:**

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**Alternate Text for Visual:**

This graphic highlights the projects goal 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	_____ %



**PROJECT TITLE: Conserving Minnesota’s Turtles through Research and Education**

**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 an 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, including 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 for mitigating 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**

**Budget: \$307,000**

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 for turtles. These efforts will begin at a limited scale prior to the granting period (i.e., during 2017). 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.

Outcome	Completion Date
1. Road surveys conducted to collect baseline movement and mortality data.	October, 2018
2. Mechanisms to reduce mortality on roads installed.	May, 2019
3. Efficacy of potential mitigation measures evaluated via post-implementation surveys.	June, 2021

**Activity 2: Improving hatching success of riverine turtles**

**Budget: \$39,000**

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-



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**2018 Main Proposal**

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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. This will enable us to identify key nesting sites for these riverine turtles. 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 to nests 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 in the Cannon and Straight River watersheds and, with ENRTF support, will be expanded to additional watersheds in central and southern Minnesota in 2018 and 2019. Nesting site monitoring will continue through spring 2021.

Outcome	Completion Date
1. Wood turtles outfitted with transmitters to collect nesting site and movement data.	October, 2019
2. Predator exclusion fencing constructed at select nesting sites.	May, 2020
3. Sites monitored post-installation to assess effectiveness in reducing mortality.	June, 2021

**Activity 3: Building public awareness at the Zoo and beyond**

**Budget: \$18,000**

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.

Outcome	Completion Date
1. Outreach materials developed.	June, 2019
2. Interpretive graphics and video outlining the biology and conservation of freshwater turtles developed and installed.	June, 2019
3. Outreach materials disseminated via Zoomobile and other programs.	June, 2021

**III. PROJECT STRATEGY**

**A. Project Team/Partners:** Activities 1 and 2 will be planned and implemented by Zoo conservation staff in collaboration with MnDOT and DNR. We anticipate that non-governmental organizations, including the Minnesota Herpetological Society, will be partners for Activities 1 and 2 as well. The Zoo will hire a new Minnesota wildlife biologist to accomplish these activities and use trained Zoo volunteers when appropriate. Activity 3 will be completed by Zoo staff. The Minnesota Zoo would be the sole recipient of funds.

**B. Project Impact and Long-Term Strategy:** 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 are currently 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.

**C. Timeline Requirements:** Project outcomes will be achieved within three years, as outlined above. Publication of research results will extend beyond the grant period.

## 2018 Detailed Project Budget

Project Title: Conserving Minnesota's turtles through research and education

### IV. TOTAL ENRTF REQUEST BUDGET: 3 years

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<b>Personnel:</b>	
Project Manager (1 person, 72% salary / 28% benefits), 0.1 FTE for 3 years	\$ 32,450
Biologist (1 person, 65% salary / 35% benefits), 1.0 FTE for 3 years	\$ 255,050
<b>Professional/Technical/Service Contracts:</b>	
Videographer contract to develop short (3 - 5 min) video about Minnesota's turtles	\$ 4,000
Publisher contract to develop and print educational workbook	\$ 10,000
<b>Equipment/Tools/Supplies:</b>	
Road mortality mitigation measures, including traffic signs, lights, and road paint	\$ 15,000
Predator exclusion fencing and associated monitoring equipment (e.g., cameras)	\$ 20,500
GPS transmitters to track movements of wood turtles	\$ 14,000
Interpretive materials, including photo licensing and installation hardware	\$ 1,000
<b>Travel:</b>	
Travel to field sites in southeastern and central Minnesota: \$3,000 / yr for 3 years	\$ 9,000
<b>Additional Budget Items:</b>	
Printing interpretive graphics and signage	\$ 3,000
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	<b>\$ 364,000</b>

### V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>Other Non-State \$ To Be Applied To Project During Project Period: N/A</b>	\$ -	
<b>Other State \$ To Be Applied To Project During Project Period:</b>		
The Zoo's general operating fund will provide additional support to the project, including utilities and administrative costs (15% of project budget)	\$ 54,232	Pending
MnDOT Grant: Roadside exclusion fencing project to reduce wildlife mortality	\$ 136,500	Pending
<b>In-kind Services To Be Applied To Project During Project Period: N/A</b>		
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.	\$ 42,000	Pending
<b>Past and Current ENRTF Appropriation: N/A</b>	\$ -	
<b>Other Funding History:</b>		
Legacy Fund appropriation to Minnesota Zoo, FY17 activities	\$ 6,000	Secured
Legacy Fund appropriation to Minnesota Zoo, FY18 activities	\$ 14,000	Pending
MnDOT Grant: Roadside exclusion fencing project to reduce wildlife mortality, FY18 activities	\$ 13,500	Pending
Minnesota Zoo Foundation, FY17 activities	\$ 7,000	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.



**GOAL**

REDUCE MORTALITY AND PROMOTE AWARENESS TO CONSERVE MINNESOTA'S TURTLES



**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 17 years, as his work has spanned a variety of species and geographic regions. Dr. 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. Dr. 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, Dr. 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 five 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.