



# Environment and Natural Resources Trust Fund

## 2023 Request for Proposal

### General Information

**Proposal ID:** 2023-139

**Proposal Title:** Assessing Status of Common Tern Populations in Minnesota

### Project Manager Information

**Name:** Annie Bracey

**Organization:** U of MN - Duluth - NRRRI

**Office Telephone:** (218) 788-2649

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### Project Basic Information

**Project Summary:** Common Tern populations across inland North America are significantly declining. Information on the status of breeding colonies in Minnesota is necessary to prioritize conservation and restoration actions.

**Funds Requested:** \$199,000

**Proposed Project Completion:** June 30, 2026

**LCCMR Funding Category:** Small Projects (H)

**Secondary Category:** Foundational Natural Resource Data and Information (A)

### Project Location

**What is the best scale for describing where your work will take place?**

Statewide

**What is the best scale to describe the area impacted by your work?**

Statewide

**When will the work impact occur?**

During the Project and In the Future

## Narrative

### **Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Common Tern (*Sterna hirundo*) populations have declined significantly across inland North America since the 1970s. In Minnesota, Common Tern is a Species in Greatest Conservation Need (SGCN) and is listed as state threatened. Habitat loss and degradation associated with water-level fluctuations, vegetation encroachment, and Ring-billed Gull (*Larus delawarensis*) competition are on-going issues. As a result, Common Terns are not currently nesting in Lake Mille Lacs, where they have nested since at least the late 1800s. Currently only three breeding sites remain in the state which are located on Lake of the Woods, Leech Lake, and in the Duluth-Superior Harbor. Despite the importance of these breeding sites for sustaining a viable population of Common Terns in Minnesota, all except Lake of the Woods, continue to experience significant declines in the number of nesting pairs. Information on breeding success for these colonies is limited and the current population status is unknown. Therefore, a comprehensive assessment is critical to determine colony-specific threats, identify opportunities for increasing breeding season productivity, and to determine the current population status of this species in the state.

### **What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.**

Minnesota's Common Tern breeding colonies are currently managed by the Minnesota Department of Natural Resources and Leech Lake Band of Ojibwe. However, the extent to which these colonies have been monitored and actively managed to mitigate habitat degradation has varied over time and largely been dependent on available funding and agency support. To achieve conservation goals for Common Tern, a robust monitoring program and access to data sharing resources is essential to inform best management practices and to prioritize conservation and restoration actions for this species in Minnesota. Our objectives are to: 1) conduct monitoring and management activities at the remaining three colonies to determine the current population status and assess whether or not population goals are being met, based on the state's recovery plan of maintaining  $\geq 1,000$  pairs, 2) develop standardized monitoring protocols for managing Common Terns that will provide a tiered approach to data collection that can be adapted based on annual resource availability, and 3) develop an online database where historical (> 35 yrs) and current monitoring data will be archived and maintained.

### **What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?**

We will work directly with wildlife managers at the main colony locations in Minnesota to facilitate monitoring and identify projects that will enhance site quality for nesting terns. This information will allow us to assess whether recovery goals are being met for this species and identify which factors may be limiting breeding success. We will develop standardized monitoring protocols and an online data management system to facilitate long-term monitoring and management goals. Results from this project will be shared with state and tribal agencies as well as federal government agencies working to conserve Common Terns.

## Activities and Milestones

### Activity 1: Monitoring and Management Activities

**Activity Budget:** \$90,000

**Activity Description:**

We will work directly with project partners; Leech Lake Band of Ojibwe and Minnesota Department of Natural Resources, to identify priorities for long-term management and monitoring based on critical needs for sustaining individual colonies at Lake of the Woods, Leech Lake, and the Duluth-Superior Harbor. To do this, we will collect updated information on the number of nesting pairs, document nesting success, and describe site conditions at each colony. We will assess predation risk, nest site competition, and habitat characteristics at each colony and document annual breeding activity and overall colony productivity. We will use remote cameras to document predation events, document the number of co-nesting species, and document habitat features within the tern nesting area and surrounding area. We will also identify areas for vegetation removal and build nesting enclosures where feasible to prevent egg and chick predation. This information will improve knowledge of the status, distribution, and conservation needs of Common Terns in Minnesota.

**Activity Milestones:**

Description	Completion Date
Summarize past and current monitoring efforts at breeding colonies	March 31, 2024
Conduct comprehensive bird and site monitoring and management	August 31, 2025
Identify factors limiting colony stability and prioritize management actions	June 30, 2026

### Activity 2: Develop a Standardized Monitoring Protocol

**Activity Budget:** \$39,000

**Activity Description:**

We will develop standardized monitoring protocols to provide technical guidance to resource managers monitoring Common Terns. We will assess available data for active colonies and determine the type and frequency of data needed to assess population status and trends. This information will allow us to develop and implement a strategy for conducting surveys that will provide a tiered approach to data collection that can be adapted based on annual resource availability. The protocol will allow for varying levels of monitoring intensity while maintaining a baseline structure necessary for cross-colony comparisons. The resulting protocol can be made available to any agency interested in collecting data on Common Terns in the state or region which will aid in collaboration, data sharing, and data comparability. Developing a formalized protocol is essential for documenting monitoring and management activities in a manner that is reproducible and that provides different options based on agency objectives.

**Activity Milestones:**

Description	Completion Date
Develop data collection standard operating procedures for bird and site monitoring	September 30, 2024
Establish a comprehensive monitoring protocol	May 31, 2025
Determine key metrics needed for long-term monitoring of terns	December 31, 2025

### Activity 3: Develop an online database and data sharing resource

**Activity Budget:** \$70,000

**Activity Description:**

We will develop a data sharing resource and web-based tools to facilitate management and conservation plans for

Common Terns in Minnesota. Developing a shared database will provide access for a greater number and diversity of people directly engaged in conservation of this species and will enhance the capacity of the Minnesota Department of Natural Resources to provide information needed for effective wildlife conservation. Using a web-based resource for data storage will allow for instantaneous access to monitoring data and built-in features capable of producing basic summaries of annual monitoring efforts. The structure and function of the database will be designed for managers and developed with input from project partners and expert wildlife ecologists to ensure both a user-friendly format and data structure that can be directly incorporated into modeling efforts to meet management needs. Once the structure exists, we can seek additional resources to include data from other colonies in the state and throughout the region.

**Activity Milestones:**

Description	Completion Date
Compile historical monitoring data available from each breeding colony	December 31, 2025
Design a database structure that supports historical data	April 30, 2026
Develop web-based tools to produce basic summaries of annual monitoring data	May 31, 2026

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Tanya Roerick	Leech Lake Band of Ojibwe	Tanya Roerick will be responsible for the monitoring and management activities at the Leech Lake colony. Tanya along with Steve Mortensen who has been responsible for monitoring and management of Common Terns on Leech Lake for > 30 years will provide input to database development and standardized monitoring protocols.	Yes
Gaea Crozier and Amy Westmark	Minnesota Department of Natural Resources	Gaea Crozier and Amy Westmark are both Nongame Wildlife Program Biologists that will provide in-kind support for this project. They will provide technical guidance for decision making on design and functionality of the database as well as input to the standardized monitoring protocol.	No

## Long-Term Implementation and Funding

**Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?**

Achieving conservation goals for a species, such as the Common Tern, that require long-term investment by resource managers obliges a commitment by project partners to work together to identify and secure any sources of funding that may be available to maintain or restore colonies into the future. The results of this project will provide management agencies that have historically and currently monitored and managed the colonies in Minnesota the tools necessary to create a robust monitoring program that can provide up-to-date critical information to inform best management practices and to prioritize conservation and restoration actions for this species in Minnesota.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Conserving Black Terns And Forster's Terns In Minnesota	M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 03o	\$198,000

## Project Manager and Organization Qualifications

**Project Manager Name:** Annie Bracey

**Job Title:** Avian Ecologist

**Provide description of the project manager's qualifications to manage the proposed project.**

Annie Bracey has worked as an Avian Ecologist at the Natural Resources Research Institute, University of Minnesota Duluth for over 12 years, working primarily on projects related to marsh birds in Great Lakes coastal wetlands. Annie obtained her PhD at the University of Minnesota in the Conservation Sciences program. Her research is focused on conservation and management issues related to Common Terns in the Great Lakes region including; 1) documenting exposure to contaminants, 2) tracking terns using light-level geolocators and GPS tags to document migration routes, wintering areas, and foraging habitats, and 3) using Integrated Population Models to make inferences about population dynamics. Her broad interest is determining how human activities influence bird populations and how research that integrates ecology, biology, and conservation sciences can be used to better inform management decisions. Her previous research has been published in scientific journals and presented to professional as well as to community audiences.

**Organization:** U of MN - Duluth - NRRRI

**Organization Description:**

The Natural Resources Research Institute (NRRI) is an applied research and economic development engine for the University of Minnesota research enterprise. NRRI employs over 130 scientists, engineers and technicians to deliver on its mission to deliver integrated research solutions that value our resources, environment and economy for a sustainable and resilient future. NRRI collaborates broadly across the University system, the state and the region to address the challenges of a natural resource based economy.

NRRI researchers have extensive experience in managing large, interdisciplinary projects. NRRI's role is as an impartial, science-based resource that develops and translates knowledge. Projects include characterizing and defining resource opportunities, minimizing waste and environmental impact, maximizing value from natural resources and maintaining/restoring ecosystem function.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Annie Bracey		Principal investigator; Project management and coordination.			25.1%	0.45		\$40,764
Alexis Grinde		Co-Principal investigator; assist with project management and coordination.			25.1%	0.16		\$19,565
Stephen Kolbe		Co-Principal investigator; assist with project management and coordination of field efforts..			22.3%	0.4		\$28,236
Francesca Cuthbert		Co-Principal investigator; assist with project management and coordination with partners.			25.1%	0.02		\$2,306
Todd Arnold		Co-Principal investigator; assist with project management and coordination of data and database management.			25.1%	0.04		\$8,587
TBD Researcher 2		Breeding colony bird and habitat assessments.			22.3%	0.24		\$16,628
Temp/Casual		Data collection and data entry.			7%	0.4		\$15,408
Graduate Student		Summer graduate student (50% GRA Y1 and Y2, no tuition benefits) to assist with data collection and analysis.			19.1%	0.26		\$14,255
							<b>Sub Total</b>	<b>\$145,749</b>
<b>Contracts and Services</b>								
Leech Lake Band of Ojibwe subcontract	Sub award	Leech Lake Wildlife Program common tern site maintenance and monitoring efforts during the 2024-2025 nesting season. This includes staff time to construct the nesting enclosure, maintain and conduct any maintenance needed on the enclosure, and time needed for common tern population monitoring.				0.04		\$15,425
Contractors TBD	Professional or Technical Service Contract	Common Tern monitoring at Interstate Island and Lake of the Woods breeding colonies: \$11,000 annually for hiring a contractor for monitoring including: \$9,000 - contractor's time for surveys and report writing \$2,000 - mileage reimbursement and boat expenses				0.2		\$22,000

							<b>Sub Total</b>	<b>\$37,425</b>
<b>Equipment, Tools, and Supplies</b>								
	Tools and Supplies	Monitoring supplies	Colony survey equipment. Drone batteries (6 @ 200 ea.) = \$1,200. Trail cameras and SD cards (12 @ 220 ea.) = \$2,640. Banding supplies = \$500					\$4,340
	Tools and Supplies	Fencing Supplies	Needed to construct a fenced in enclosure for nesting birds at Leech Lake. This includes u-posts, fencing, wire, and hardware).					\$1,000
							<b>Sub Total</b>	<b>\$5,340</b>
<b>Capital Expenditures</b>								
							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	-
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	Monitoring supplies	Hotels for field season (double occupancy) 40 nights @ 100 / night = \$4000. Travel to and from field sites: 7000 miles x 0.585/mile = \$4095. Per Diem for field technicians 40 @ \$45.00 / day = \$1800. Boat use = \$514					\$10,486
							<b>Sub Total</b>	<b>\$10,486</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								



							<b>Sub Total</b>	-
<b>Other Expenses</b>								
							<b>Sub Total</b>	-
							<b>Grand Total</b>	<b>\$199,000</b>

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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## Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
<b>State</b>				
In-Kind	Minnesota Department of Natural Resources	In-kind Support from MN DNR: from Nongame Wildlife Staff (estimated 40hrs at \$50/hr). Estimated \$2,000. Letter from DNR was received	Secured	\$2,000
			<b>State Sub Total</b>	<b>\$2,000</b>
<b>Non-State</b>				
In-Kind	UMN unrecovered indirect costs are calculated at the UMN negotiated rate for research of 55% modified total direct costs.	Indirect costs are those costs incurred for common or joint objectives that cannot be readily identified with a specific sponsored program or institutional activity. Examples include utilities, building maintenance, clerical salaries, and general supplies. ( <a href="https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs">https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs</a> )	Secured	\$109,450
In-Kind	Leech Lake Band of Ojibwe	Leech Lake Band of Ojibwe will provide in-kind contributions as effort, equipment, and supplies.	Secured	\$15,000
			<b>Non State Sub Total</b>	<b>\$124,450</b>
			<b>Funds Total</b>	<b>\$126,450</b>

## Attachments

### Required Attachments

#### *Visual Component*

File: [f9a30761-701.pdf](#)

#### *Alternate Text for Visual Component*

Title reads "Assessing Status of Common Tern Population in Minnesota".

Three text boxes summarize problem, solution and outcomes associated with project.

Pictures include three pictures of Common Tern, a map of colony locations in the state, and two pictures of breeding colonies....

### Optional Attachments

#### *Support Letter or Other*

Title	File
Minnesota Department of Natural Resources In-Kind Letter	<a href="#">c4dfbe5b-9df.pdf</a>
Leech Lake Band of Ojibwe letter of support	<a href="#">f65af7c0-942.pdf</a>
UMD Sponsored Projects Administration transmittal letter	<a href="#">ba4beb02-c18.pdf</a>

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**Does your project have potential for royalties, copyrights, patents, or sale of products and assets?**

No

**Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?**

N/A

**Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?**

N/A

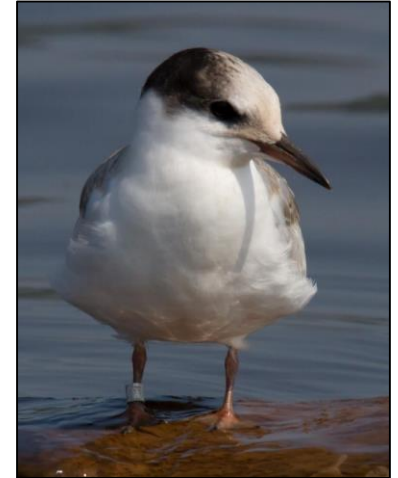
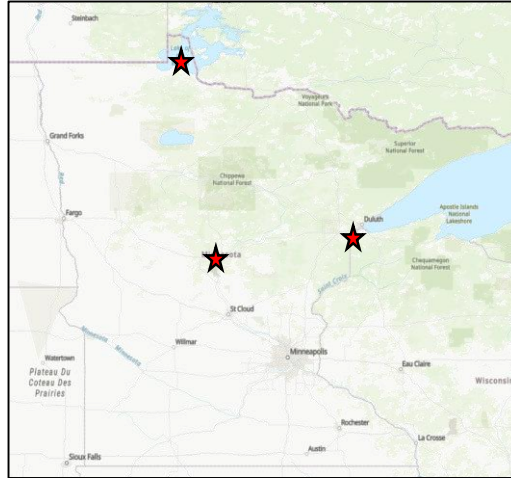
**Does your project include original, hypothesis-driven research?**

Yes

**Does the organization have a fiscal agent for this project?**

Yes, Sponsored Projects Administration (UMD)

# Assessing Status of Common Tern Populations in Minnesota



## Problem:

Common Tern populations across the Great Lakes region are significantly declining. There are currently only three long-term active breeding sites in Minnesota.

## Solution:

Assess colony-specific threats, determine current population status of this species in Minnesota, and develop online data sharing resources to facilitate long-term management and conservation goals.



## Project Outcomes:

Provide management agencies the tools necessary to create a robust monitoring program that will provide up-to-date critical information to guide best management practices. This information will help prioritize conservation and restorations actions is essential for maintaining a viable population of Common Terns in Minnesota.

